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An assessment of the water development project (GAP) of Turkey meeting its objectives and eu criteria for Turkey's accession

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THESIS

AN ASSESSMENT OF THE WATER DEVELOPMENT PROJECT (GAP) OF TURKEY: MEETING ITS OBJECTIVES AND EU CRITERIA FOR TURKEY'S ACCESSION

by

Aristotelis Varsamidis

December 2010

Thesis Advisor: Robert E. Looney
Second Reader: Wade L. Huntley

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13. ABSTRACT (maximum 200 words)

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In 1989, Turkey implemented a multisectoral Water Development Project (GAP) to bring socio-economic development in its undeveloped Southeastern Anatolia region by exploiting the Euphrates and Tigris water. However, the GAP project not only has failed in meeting its objectives, but also has raised more obstacles for Turkey's full membership to the EU.

The thesis assesses the GAP project in terms of progress of its objectives by scrutinizing the agricultural-energy sector and the socio-economic status of the Southeastern Anatolia region. Additionally, this thesis proceeds to conclude the assessment by focusing on the role of the project in the stability of the region made-up by Turkey, Syria, and Iraq, as well as the status of the internally displaced people as a result of the GAP project, within the context of human rights.

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AN ASSESSMENT OF THE WATER DEVELOPMENT PROJECT (GAP) OF TURKEY: MEETING ITS OBJECTIVES AND EU CRITERIA FOR TURKEY'S ACCESSION

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Submitted in partial fulfillment of the
requirements for the degree of

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LIST OF ACRONYMS AND ABBREVIATIONS

CATOM	Multipurpose Community Center
CSCE	Commission on Security and Cooperation in Europe
CRW	Combustible renewable and Waste
DSI	Directorate of State Hydraulic Works
EACH-FOR	Environmental Change and Forced Migration Scenarios
EBDP	Euphrates Basin Development Project
EIAS	Environmental Impact Assessment Study
EIA	Environmental Impact Assessment
EU	European Union
GAP	Gunaydyn Anadolu Projesi
GAP-RDA	GAP-Regional Development Administration
GOLD	General Organization for Land Development
GWh	Giga Watt hours
GDP	Growth Development Product
GNP	Growth National Product
IHD	Institute of Human Development
IDP	Internally Displaced People
HEPP	Hydro Electric Power Plant
Kg	Kilogram(s)
KHRP	Kurdish Human Rights
KWh	Kilo Watt hours
LSIP	Lower Seyhan Irrigation Program
Mtoe	Million Tone Oil Equivalent
MARA	Ministry of Agriculture and Rural Affairs
MW	Mega Watt
N/A	Not Available
NGO	Non Governmental Organization
NID	New Industrial District
OECD	Organization for Economic Cooperation and Development
PKK	Kurdistan Worker's Party
SAP	Southeastern Anatolia Project
SEDI	Socio-Economic Development Index
SIS	State Institute of Statistics
SPO	State Planning Organization
TL	Turkish Lira

TOKI	Housing Construction Agency
TWh	Terra Watt hours
UC	Under Construction
UCTE	Union for the Coordination of Electricity Transmission
UK	United Kingdom
UNDP	United Nation Development Program
UNESCO	United Nations Educational and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
WCD	World Commission on Dams

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I. INTRODUCTION

A. TWENTIETH CENTURY DAMS AND THE GAP PROJECT

As the only tool for harnessing the power of water, large dams have brought human development and economic progress, and should thus be viewed as symbols of modernization and the human ability to harness nature.[1] At the beginning of the twentieth century, dams were dedicated solely to flood prevention and control; later, they became essential for irrigation, and ended up embodying multipurpose projects within the context of water development. Multipurpose projects address different kinds of needs such as navigation, flood control, irrigation, water supply, and hydropower—most recently, within the context of "the less water wasted the better."[2] To this end, technological advances allow humans to dam, divert and control almost all of world's powerful rivers in order to bring progress, including the growth of cities in deserts, irrigated agriculture to feed the ever-growing world population, and energy to boost industry and development.[3] One such technological advance was the improvement of the turbine design, which was used widely in large dams generating hydropower, and ushering in the mega-dam boom that marked the 1930s.[4]

In the above discourse, the essence of "development" is defined strictly in terms of the large-scale, technocratic advance of intensive exploitation of water resources for the purpose of economic growth.[5] However, the above growth is not always accompanied

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[1] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), xxix.

[2] Julie Trottier and Paul Slack, *Managing Water Resources Past and Present: The Linacre Lectures 2002* (Oxford University Press, 2002), 60.

[3] Fiona Curtin, "Transboundary Impacts of Dams: Conflict Prevention Strategies," in *Dams on Transboundary Rivers,* edited by Eric Mostert, Contributing Paper to the World Commission on Dams (WCD) prepared for Thematic Review V.3: River Basins-Institutional Frameworks and Management Options (July 4, 2000), 10.

[4] Stefanie Joyce, "Is It Worth a Dam?" *Environmental Health Perspectives* 105, no. 10 (October 1997), 1051.

[5] Sanjeev Khagram, *Dams and Development: Transnational Struggles for Water and Power* (Cornell University Press, 2004), 4.

by improvement, which puts into question the "development" brought by big dams. This became the turning point, from the 1980s onwards, in the booming history begun in the 1930s, of large dams and multipurpose projects, where the dam era began to decline as the concept of "sustainable development" emerged. The broadly accepted definition of "sustainable development" expresses that a fundamental balance be established between economic development, natural development, and people.[6] According to the World Commission on Dams (WCD), any dam project must aim to advance human development by satisfying economic development, social equity and environmental sustainability in order to deserve support from the international community.[7]

The dam-declining era started when the debate over the effectiveness of big dams around the world was triggered by environmentalists who noted their adverse effects, including disrupting ecosystems, declining fisheries and the spread of disease.[8] From the 1980s through the 1990s, environmental transnational nongovernmental organizations increased dramatically and were dedicated to affecting the outcomes of dam development.[9] For example, in the United States, these organizations could challenge congressional water projects and compel policy change and reforms in their implementation. Moreover, future projects will be tied more to ecosystem restoration, and U.S. planners will take into account the economic benefits of water usage and environmental costs as constraints in the planning process.[10] Additionally, at the international level, the World Bank pulled out from funding a number of water project agreements as a result of facing charges from the organizations for failing to consider human health and the environmental costs of the water projects.[11]

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[6] Peter Ashton, "Water and Development: A Southern African Development Perspective," in *Managing Water Resources Past and Present: The Linacre Lectures 2002*, edited. by Julie Trottier and Paul Slack (Oxford University Press, 2002), 161.

[7] World Commission on Dams (WCD), *Dams and Development,* 2.

[8] Stefanie Joyce, "Is It Worth a Dam?" *Environmental Health Perspectives*, 105, no. 10 (October 1997), 1051.

[9] Khagram, *Dams and Development*, 12 (Table 1.1).

[10] Martin Reuss, "The Development of American Water Resources: Planners, Politicians, and Constitutional Interpretation," in *Managing Water Resources Past and Present: The Linacre Lectures 2002*, ed. Julie Trottier and Paul Slack (Oxford University Press, 2002), 66–68.

[11] Joyce, "Is It Worth a Dam?" 1051.

Along with environmentalists, sociologists began to play an important role in the planning process of water projects. This became obvious by the directives and the revision of policies on the resettlement of indigenous people affected by large dams, and adopted by their largest financier, the World Bank. [12] As a follow-up to the environmental concerns in the United States, great consideration has been given to the concerns of ethnic minorities, the inarticulate, and the poor, whose physical habitats and livelihoods have been lost for the sake of national economic development.[13] According to the WCD, 40 to 80 million people have faced physical displacement as a result of large dam constructions around the world. The exact number cannot be estimated accurately, as nations have a tendency to underestimate the number of displaced, and those who have the right to resettlement are also underestimated by 47 %. Most importantly, and beyond displacement, the participation of those who would be affected in the planning process and implementation of dam projects, including resettlement and compensation, is mostly ignored, leading to migration and impoverishment.[14]

Without losing track of development effectiveness framed by environmental and social costs, the debate has recently risen in a holistic manner, traversing even national boundaries. The debate not only refers to issues concerning gaps between the promises and goals of large dams and facts on the ground, but it also involves issues of economic recovery as well as regional development choices.[15] This latter takes on significance when it comes to sharing river systems among neighboring countries and when disputes arise over issues related to the allocation of water, dam construction, water quality, and diversion schemes. The Euphrates-Tigris Basin is considered one of the contested trans-boundary river systems, in which Turkey, Syria and Iraq are involved. Specifically, the

[12] World Commission on Dams (WCD), *Dams and Development*, 18.

[13] Reuss, "The Development of American Water Resources: Planners, Politicians, and Constitutional Interpretation," 68.

[14] World Commission on Dams (WCD), *Dams and Development*, 104–108.

[15] World Commission on Dams (WCD), *Dams and Development*, 21–23.

sources of friction among the three states are related to dam construction, water quality and allocation of waters. Moreover, several times, these disputes have led to interstate threats of war.[16]

In that vein and at the international level, water development, supply and management have been among the most important political issues of the European Community since the 1990s.[17] The main focus of the European Union, on issues related to water, is dealing with the mitigation of the negative impacts of water resources development.[18] In doing so, the EU has provided guidelines and policies for water development that can be implemented at river basin levels in pursuit of conflict prevention and trans-boundary co-operation between states and sustainable river basin management.[19] Summarizing some of these guidelines/policies, according to Article 4, environmental objectives have to be satisfied, resulting in a "good status" by the year 2015. Article 3 prompts EU member states to identify the river basins lying in their national territory and adopt a cooperative approach and to coordinate in common, to deal with ecological status, the quality and quantity status of their basin water within the context of integrated water resource management. Finally, Article 14 stipulates the necessity for "public participation" of all stakeholders affected by the process and implementation of the EU water policy.[20] This latter takes great significance when it comes to those people displaced by water development projects who have no say in the planning process. In 1992, the United Nations (UN) Conference on Environment and Development declared twenty-seven principles (Rio Principles) directly relating to water resources management. Most of the principles are human-centric and recognize the

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[16] Institute of National Security Strategies (INSS), "Energy and Environmental Insecurity," in *Global Strategic Assessment 2009* (INSS, 2009), 88.

[17] Maria Kaika, "Water for Europe: The Creation of the European Water Framework Directive," in *Managing Water Resources Past and Present: The Linacre Lectures 2002*, ed. Julie Trottier and Paul Slack (Oxford University Press, 2002), 109.

[18] Aysegul Kibaroglu, "Analysis of the Integrated Water Resources Management Approach: Turkey-EU Water Relations as A Case-study," (May 31, 2008), 5.

[19] Murray Biedler, "Hydropolitics of the Tigris-Euphrates River basin With Implications for the European Union," *Centre Europeen de Recherche Internationale et Strategique (CERIS)*, Research Papers No. 1 (2004), 30–31.

[20] Kibaroglu, "Analysis of the Integrated Water Resources Management Approach," 5.

irremovable human right of living in harmony with nature integrated in a sustainable developmental process, the right of indigenous people to participate in such development, and a state's liability to ensure compensation for victims of environmental damage.[21]

At first glance, the UN constitutes a supplementary component of the EU water policy at the very local level of human rights within the frame of the sustainable development of water projects. while the EU moves at a more international level. The link of "public participation," however, connects both organizations to cover the whole aspect of water development.

This "diversification" is explained, based on the EU mission, within its context of enlargement. The EU perceives, as a global challenge for security, competition over natural resources, especially water, which is likely to bring turbulence in many regions.[22] The EU's main goal is to bring together its twenty-seven members with twelve southern Mediterranean countries in an area where peace, prosperity and security are established. This aim is being realized with EU engagement in solving the water-related issues between Israel, Jordan and the Palestinians by promoting and encouraging the joint undertaking of water-related projects for building peace in the area.[23]

In 1999, the EU decided to include Turkey in its enlargement list by elevating it from the status of the applicant to that of a candidate member of the EU, which means that the EU intends to extend its borders towards a region riddled with tension and problems.[24] On the other hand, Turkey has to take over the responsibility of aligning itself to EU directives by implementing appropriate political and economic reforms for obtaining full membership.[25] In regard to the EU's water policy, Turkey faces a great

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[21] World Commission on Dams (WCD), *Dams and Development*, 201–202.

[22] Javier Solana, "A Secure Europe in a Better World-The European Security Strategy," in *European Development Policy Confronting New Challenges in Foreign and Security Policy,* International Conference (Berlin: November 23, 2004), 53.

[23] Annika Kramer, "Regional Water Cooperation and Peace Building in the Middle East: Regional Case Study, Middle East," Initiative for Peace Building (EU) (December 2008), introduction.

[24] Commission of the European Communities, "Issue Arising from Turkey's Membership Perspective," *Commission Staff Working Document* (Brussels: October 2004), 7.

[25] Ayse B. Celik, "Transnationalization of Human Rights Norms and Its Impact on Internally Displaced Kurds," *Human Rights Quarterly* 27, no. 3 (August 2005), 987.

challenge in the Euphrates-Tigris basin with the downstream states—Syria and Iraq—in terms of initiating a cooperative approach to resolving their accrued water-related problems resulting from a water development project Turkey began in the basin in the 1980s. Moreover, Turkey is facing a far greater challenge in the issue of human rights for the Internally Displaced People (IDP) in Turkey (Kurds in their majority), after a rather negative criticism—launched in 2004—by the European Commission (EC) on their resettlement progress. Even though the EC does not discriminate between IDPs, as a result of the military conflict between the Turkish army and PKK insurgents and IDPs as a result of water development projects, it embraces both categories as the principles stipulate, and refers to the same region of Turkey—Southeastern Anatolia.

From the above discourse, it is clear that Turkey faces a great challenge in obtaining full membership in the EU, within the framework of water cooperation in the basin and human rights.

At the national and regional level of Southeastern Anatolia, the waters of the Euphrates and Tigris rivers have been exploited through the construction of small and large dams with ambiguous results in the region, thus validating the debate on the effectiveness and sustainability of large-scale water development projects.

Specifically, Turkey has launched an integrated regional development project (GAP),[26] which covers investments in dams, power plants, agricultural irrigation schemes, urban and rural infrastructure, industry, transportation, education, health, housing, and tourism.[27]

The initial stage of the GAP, in the 1960s and 1970s, put its primary emphasis on hydroelectric power generation due to the increased national demand for electricity.[28] By 1989, the GAP Master Plan's development scenario shifted its emphasis to transforming the rural Southeastern Anatolia region into an export base for its agricultural products.[29]

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[26] GAP name comes from the Turkish acronym, Gunaydyn Anadolu Projesi.

[27] Republic of Turkey, "Turkey Water Report," *General Directorate of State Hydraulic Works*, 2009, 36.

[28] Servet Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: its Context, Objectives and Prospects," *Orient* 37, no. 1 (1996b), 59.

[29] I. H. Olcay Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4 (1997), 460.

An increase in agricultural production contributed to infrastructural development, and increased economic activities and agro-related industries and services.[30] As of 2006, the GAP sought to increase the income levels and living standards of people (a majority of whom are Kurdish) living in the region, to remove inter-regional development disparities and to contribute to the nationwide goals of economic development and social stability.[31]

The ultimate aim of the project (GAP) is to ensure sustainable human development in the region; thus, dams and other physical infrastructure are necessary for economic growth.[32] Upon completion of the project, twenty-two dams and nineteen power plants will irrigate 1.8 million hectares of land (21% of Turkey's total irrigable land), generate energy reaching 27.385 GWh (20% of its total energy potential), the region's per capita income will rise 209%, and 3.8 million jobs will be created.[33]

On the other hand, the Southeastern Anatolia rural region has been neglected since 1923; thus, the increased poverty level provided a suitable environment for recruitment by the secessionist movement Worker's Party of Kurdistan (PKK), which has been engaged in armed clashes with Turkish troops in the region since 1984.[34] Additionally, this region has demonstrated a demographic explosion, coupled with massive out-migration to the western cities of Turkey, as well as in-migration. These factors have exerted infrastructural pressure on both fronts.[35] As of the 1990s, Turkey has attempted to solve her internal problems in terms of economic growth to alleviate poverty in the region through the implementation of the GAP project. Therefore, the GAP serves the purpose of creating economic growth and integrating the region, in an attempt to reverse the aforementioned problems by using a massive irrigation-hydroelectric infrastructure, which will utilize the land and the water of the region. However, the

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[30] Unver, "Southeastern Anatolia Project (GAP)," 461.

[31] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration (RDA)* (June 2006), 1.

[32] Republic of Turkey, "Turkey Water Report 2009," *General Directorate of State Hydraulic Works (DSI)*, 2009, 38–39.

[33] Republic of Turkey, "Turkey Water Report 2009," 38.

[34] Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: its Context, Objectives and Prospects," *Orient* 37, no. 1 (1996b), 59.

[35] Mutlu, "The Southeastern Anatolia Project," 60.

implementation of the GAP has raised tension in the region's basin, which is made up of Syria and Iraq as well, because of the effects of the GAP on the environment and the socioeconomic interests of the downstream states. This tension did not evade international attention, as it carried the potential for political and armed conflict in the Middle East region.[36]Additionally, it has attracted the scrutiny of the EU concerning the resettlement of the internally displaced people in Turkey within the framework of its full membership.

Both aforementioned issues have been reported in a negative way by the Kurdish side, which represents the direct stakeholder in Southeastern Anatolia, where the GAP project is supposed to bring development. In particular, the Kurdish side claims that the GAP is controversial in terms of socioeconomic development and political implications, both domestically and internationally. The construction of dams in the Southeastern Anatolia provinces constitute just another form of forced displacement that Kurdish populations met during the civil war in the mid-1980s to late 1990s. [37] The project is far from improving the level of wellness, peace and happiness of the citizens of the region, and in its current state, will cause instability internally and in the region. The Kurdish side brings up the Ilisu Dam issue, which is representative of the displacement of local people and of the tension it will cause, as it will reduce the flow of water towards Syria and Iraq, thus causing alleged conflict in the region.

To sum up poising the GAP project in the above discussion, the project faces multiple challenges internationally and domestically. At the international level, the effectiveness of the large-scale water projects is debatable, according to WCD. At the same time and within the frame of human sustainable development, the issue of displaced people as a side effect of dams has been a great concern by the UN and currently by the EU. At the national level, the Kurdish side is not in agreement with the Turkish state in regard to the outcomes of the GAP project.

In that light, the scope of this thesis is to assess the progress of the GAP project in the above issues. Therefore, the thesis aims at assessing the GAP in terms of agriculture

[36] Mutlu, "The Southeastern Anatolia Project," 59.

[37] "Turkey's GAP and its Impact in the Region," *Kurdish Herald* 1 no. 5 (September 2009).

and energy advances, as well as on the human welfare status in Southeastern Anatolia in regard to the goals and objectives of the project and also its challenge to meet EU criteria for Turkey's accession to EU.

Therefore, the major research question the thesis will attempt to answer is:

How far has the GAP project progressed in meeting its objectives in the agriculture-energy sector and the socioeconomic development of the Southeastern Anatolia region as well as the EU criteria on regional stability and human rights?

B. PROBLEMS AND HYPOTHESES

A first hypothesis is that adverse climate change will negatively affect the water quantity of the basin, and coupled with the construction of large-scale dams that facilitate evaporation and transpiration, the water quantity will be further reduced.

A second hypothesis is that the growing population in Turkey, Syria and Iraq as well as the degree of dependence on the agriculture sector for food security, will increase the demand for domestic water consumption and irrigation practices, a trend not consistent with the extensive irrigation programs in Southeastern Anatolia and Syria.

A problem is that there is no precise census regarding the issue of the population making up the Southeastern Anatolia region of Turkey. The area is inhabited by Turk, Arab and Kurd ethnicities, of which Kurds are the majority. According to a 1990 estimation, 64.98%[38] of the populations in Southeastern Anatolia are Kurds, but this figure has probably changed, as during the period 1990–1999, roughly one million Kurds fled the region as a result of the civil war between the Turkish army and the PKK insurgency. Therefore, it is difficult to demonstrate the magnitude of the effect of the GAP project, in terms of macro and micro indicators, on Kurdish populations.

Finally, and of great significance, is the problem regarding the validation of collected information and statistical data to construct the macroeconomic indicators for the examined period 2001 onwards. The same concern has been stated in the theses

[38] Servet Mutlu, "Ethnic Kurds in Turkey: A Demographic Study," *International Journal of Middle East Studies* 28, no. 4 (November 1996), 533 (Table 3).

mentioned in the literature review for the period 1990–2000. This thesis is faced with the difficulty of collecting updated information from the Turkish Institute of State Statistics on critical macroeconomic indicators. Most of these are referring to 2000, while indicators of no such significance are up to date. However, the thesis proceeds by providing cross-checked sources.

C. LITERATURE REVIEW

The WCD was established as an NGO in 1998, and after a two-year intensive study of several large dams, portrayed in its 2000 report the fact that large dams and complex water projects met their goals to a lesser percent than had been anticipated. On the other hand, ecology degradation, poor performance and displaced people, due to construction, were the impacts of large dams. WCD's report has no data or evidence related to the performance of the GAP project.

Though minimal, the literature related to the GAP project can be divided into two main categories: the academic literature on GAP-related issues and the literature consisting of theses and dissertations. The major difference between the two categories is that the first category presents mainly scattered information on the agricultural, energy, socioeconomic and regional water-related issues that the GAP projects are involved in, covering a time frame from 1985 up to now. The latter category focuses on the socioeconomic achievements of the GAP project from the economic regional development and human sustainability perspective, and secondarily at the regional level. Moreover, this category was written in 2001 through 2008, but refers to the period from 1990 through 2002. Even with both sets of literature, there are scant sources to present all the issues the GAP project issues is involved in, and what there is highlights mostly the period from 1990–1996.

In regard to the issue of Turkey's accession to the EU, and its connection to the GAP project, there is one thesis from the literature category that touches upon the issue of human rights by using the case of the Ilisu Dam.

The academic literature can be further broken down into three sub-categories. The first explores the impact of the GAP at the international level. The second presents the evolutionary aspect of the project and problems that must be resolved in regard to its goals. The third category refers generally to the negative impact of the GAP, focusing on the Ilisu Dam as a case study.

The first sub-category views the GAP project from the perspective of international relations between Turkey, Syria and Iraq, which all make up the Euphrates Basin. In this light, the scholarship approaches the GAP project from the aspect of water disputes, wars on water sharing, and states' unilateral actions, as well as negotiation and internal-regional security. In the Euphrates Basin, it is argued that the GAP project has launched a "Hydro-Jihad" between the three countries as they are contesting the allotment of Euphrates water.[39] Unilateral actions taken to harness Euphrates water by the three countries have led to water conflicts, as these actions have had adverse impacts on downstream countries; Syria is downstream from Turkey and Iraq downstream from Syria.[40]

The aspect of negotiation presents immediate interest as it connects power, strategic and security issues. The GAP project is presented as giving the advantage of power to Turkey, while the vulnerable downstream countries, as counterweight strategies, use national interests affected by the GAP. In the case of Syria, the PKK issue is being used to exert pressure on Turkey in regard to water quantities.[41] In the PKK issue, there is support for the contention that Turkey has implemented the GAP to solve the Kurdish

[39] Vandana Shiva, *Water Wars: Privatization, Pollution and Profit* (South End Press, 2002), 71.

[40] Miriam R. Lowi, *Water and Power: The Politics of a Scarce Resource in the Jordan River Basin* (Cambridge University Press, 1993), 57.

[41] Marwa Daoudy, "Asymmetric Power: Negotiating Water in the Euphrates and Tigris," *International Negotiation* 14, no 2 (Nijhoff, 2009), 361–362.

issue in the broader frame of Turkey's attitude towards Arab states.[42] Also, Syria exerted a veto in the financing of the GAP project due to the water pollution that extensive irrigation activities in Turkey have caused.[43]

The second sub-category includes an evaluation of the international aspect of the GAP, but the main focus is on the GAP's goals and achievements.

A unique, detailed and holistic scientific study of the GAP project in terms of technical details of the major dams of the project, financing, geological, hydrological and water scarcity considerations at the international level, is given by Kolars and Mitchell. They focus on the sectors of agriculture and industry in the region and nation, and give their perspective on future prospects of the GAP project. They leave a scent of optimism for the success of the project. However, they have predicted delays in progress and that less land will be irrigated than originally planned. They also suggest that the agricultural sector will be the most profitable if modern mechanized methods of irrigation and selection of the least water-consuming crops are used.[44] Their study is well substantiated but, as they state in their book, they have encountered many problems with gathering accurate data, which are as old as 1980–1988. They do not make any reference to the energy sectors of the project.

Two important studies conducted in 1996 and 1995, respectively, examine the potential of the GAP project from different perspectives and conclude different results. First, both studies address the issue of the viability of the GAP project in relation to its goals stated in the master plan.

The first study focuses on the bleak viability of the agricultural sector, as there are serious problems—such as on-farm training, land distribution, erosion, siltation and

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[42] Jack Kalpakian, *Identity, Conflict and Cooperation in the International River Systems* (Ashgate, 2004), 97.

[43] G. E. Gruen, "Turkish Waters: Source of Regional Conflict or catalyst for Peace?" *Water, Air, and Soil Pollution* 123 (Kluwer Academic Publishers, 2000), 517.

[44] John Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Project* (Southern Illinois University, 1991), 260.

salinization—that must be overcome.[45] Then it goes on to the need for capital flow and a strong administration to take on such a large project, and concludes, in turn, with the lack of agreement between the riparian countries on the allocation of water.[46]

The second study touches on the same topics of agriculture and financial cost, but it examines the socioeconomic aspect of the Kurdish populations in the area of the GAP. In particular, it argues that the social structure of the Kurds cannot be integrated or culturally assimilated through the strategy of the socioeconomic integration of the GAP.[47] On the other hand, the study argues that the GAP has the potential in agriculture, industry and urbanization sectors to improve the economy of Southeastern Anatolia.[48] Contrastingly, the two studies contradict each other on the issue of the viability of the agriculture sector, and neither one mentions the prospects of the energy sector, which is the second pillar of the GAP.

These two complementary studies lead to contradictory results in regard to the impacts of the GAP project. The major study of Mitchell and Kolars seems to settle in the middle, as it presents the GAP with conditional optimism.

The third sub-category is all engulfing, with a special interest in the Ilisu Dam, even though the dam is not representative of the whole GAP project.

This part of the scholarship points out the environmental, economic, social and political impacts of the GAP project by using, as its case study, the Ilisu Dam, which for decades has been highly controversial at both the domestic and international levels for the above reasons. There is consensus on the following set of issues. The primary motivation of the GAP is to economically relieve the unhappy minority of Southeastern Anatolia.[49] Also, Turkey is under pressure to develop her resources to reduce her foreign deficit and

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[45] Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: its Context, Objectives and Prospects," *Orient* 37, no. 1 (1996b), 71–75.

[46] Mutlu, "The Southeastern Anatolia Project," 75–82.

[47] Carl E. Nestor, "Dimensions of Turkey's Kurdish Question and the Potential Impact of the Southeastern Anatolia Project (GAP)," *The International Journal of Kurdish Studies*. 8, no. 1 (1995), 34–35.

[48] Nestor, "Dimensions of Turkey's Kurdish Question," 78.

[49] Kalpakian, *Identity, Conflict and Cooperation*, 97–102.

mitigate political instability in the region by improving the living status.[50] The GAP has not borne the anticipated regional economic and social development.[51] The Ilisu Dam will flood Kurdish villages, thus exacerbating the relations between the state and the Kurds.[52] There is need for an overall review and precise assessment on the economic, ecological and social problems of the GAP and, in particular, of the Ilisu Dam.[53] The scholarship is lacking detailed evidence in all the above-mentioned problems. Also, the agricultural performance of the GAP is not mentioned and the energy sector is treated as an overview of Turkey's energy demands.

In the second category of literature, the GAP project is judged as environmentally and socially unsustainable on the basis that the soil supposed to provide food to local farmers is being destroyed, due to accruing salt as a result of the irrigation of the GAP project.[54]

The next two theses are complementary to each other as they focus on the economic aspect of the GAP project by examining macroeconomic indicators such as GDP, GDP per capita, industry and trade and microeconomic factors such as infrastructure, services and socio-demographic indicators. However, their approach is different, as one examines the project at the regional level and the other by using economic indices: Theil inequality and Gini coefficient. Both findings, covering mainly the period from 1987 through 2001, agree that the relative economic development of the Southeastern region, compared to Turkey as a nation, has not improved. Even though there is improvement in absolute numbers, there is still intraregional economic inequality. Their conclusions sound optimistic, as both predict that at the regional level, the relative

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[50] John Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Project* (Southern Illinois University, 1991), 17.

[51] Ercan Ayboga, "Report About the Impacts of the Southeastern Anatolia Project (GAP) and the Ilisu Dam on the Downstream Countries Iraq and Syria," Initiative to Keep Hasankeyf Alive (August 25, 2009).

[52] Fikret Adaman and Murat Arsel, *Environmentalism in Turkey: Between Democracy and Development?* (Ashgate, 2005), 7.

[53] Swiss Federal Institute of Technology (ETH), "Sustainable Management of International Rivers; Case Study: Southeastern Anatolia Project in Turkey, GAP," *Center for International Studies* (Zurich, 2001), 1–35.

[54] Nilay Ayguney, "Burdens of 'Development' in Southeastern Turkey: Salinization and Socio-cultural Disruption" (Thesis, Lund University, 2002), 2.

economic disparity will be reduced[55], however, the social aspect of the project has been neglected, which means the project marked only economic success on a macro level for the above period of time.[56]

The next pair of theses presents the Turkish aspect of the GAP project on the international level within the context of transboundary water resources management. Specifically, one thesis examines the GAP project within the frame of conflict over the water between Turkey, Syria and Iraq as a result of domestic policies and the concerns of the states, and not on the basis of a water shortage in the basin. The thesis concludes that the GAP project strained the tensions between Turkey and Syria but not between Turkey and Iraq, and because the domestic concerns of the states are similar, the only way out of the conflict is to cooperate in water management on an integrated regional basis.[57] Similarly, the second thesis examines the GAP project at the same international level, but within the frame of poor interstate relations in the basin and their adverse impact on the GAP project. This thesis takes the Ataturk and Ilisu Dams as case studies to support its argument.[58]Neither thesis elaborates on the progress of the agriculture or energy sectors of the GAP project. The first thesis accepts that remarkable achievements have been reached, but the project lags behind in improving living standards in the region.[59] The second one, even though it mentions the socioeconomic aspect of the project, states that this issue cannot be quantified or put to the success/failure test. However, the thesis's overall impression is positive about the success of the project for the last three decades,

[55] Ahenk Dereli, "Regional Development and Impacts of Regional Development Projects in the Light of 'New Economic Geography' and Firm Heterogeneity: The Case of Southeastern Anatolia Project (GAP)" (Thesis, Aarhus University, 2008), 63.

[56] Sibel S. Toybiyik, "The Impact of the Southeastern Anatolia Project on the Inter-Regional Inequalities in Turkey" (Thesis, Middle East Technical University, 2003), 125–131.

[57] Salih Korkutan, "The Sources of Conflict in The Euphrates-Tigris Basin and Its Strategic Consequences in the Middle East" (Thesis, Naval Postgraduate School University, 2001), 84–87.

[58] Ahmet Ozturk, "Management of Transboundary mega-projects in the post-Cold War Eurasia: The case studies of GAP water and Baku-Ceyhan pipeline projects" (PhD diss., Keele University, 2006), 226–245.

[59] Ozturk, "Management of Transboundary mega-projects in the post-Cold War Eurasia," 47.

but it leaves a scent of pessimism for the years to come, unless Turkey adopts a more flexible approach towards domestic and international concerns.[60]

The last thesis examines the GAP project in the period 1990–2000, within the context of sustainable development and Kurdish human rights, concluding that Middle East stability depends on these two issues.[61] I separate this thesis from the rest for its uniqueness on touching upon the resettlement issue in the Ilisu case and the impact on Turkey's accession to the EU.[62] The thesis accepts that the GAP project has brought a broad agricultural boom, though not all Kurds are benefitting from it, while predicting that the agriculture sector will be further diminished in the future, without providing any proof.[63]

Taking all the theses together, the general impression is that the GAP project for the period 1990–2000 has been successful in absolute economic terms, but not relative to Turkey's economic indicators. The socioeconomic development of the people in the region lags behind, so far, and there is need for more comprehensive research. At the international level, the GAP project caused tensions among the states of the basin and negatively affected them in terms of further progress. The agriculture and energy sectors' progress have not been the main focus of the theses, but in one case, which addressed the issue within the frame of the agriculture sector, in a very confined and strict way, stated that the salinization of the soil due to irrigation destroyed Kurdish livelihoods. In brief, the theses examined the GAP project in its broader objectives and in the early years of its operation, which is not fair.

Concerning the issues of Turkey's accession to the EU and the GAP project, the latter is addressed at the regional level of geopolitics as a factor amongst others, which may create turmoil in regional relations if it is used as a tool to stop the flow on the Tigris

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[60] Ozturk, "Management of Transboundary mega-projects in the post-Cold War Eurasia," 326–328.

[61] Julia Hill, "The GAP and Human Rights: Turkey's Successes and Conflicts with Sustainable Development in the Kurdish Region of Southeastern Anatolia" (Thesis, International Studies of Oregon University, 2006), 62.

[62] Hill, "The GAP and Human Rights," 59.

[63] Hill, "The GAP and Human Rights," 54–55.

and Euphrates Rivers.[64] However, the bulk of the literature on the accession issue focuses on the political criteria known as the Copenhagen Criteria, and in particular, on human rights in Turkey. In that light, the GAP project is considered to be a top-down state-centric approach to the socioeconomic issue of Southeastern Anatolia, with almost no link or say in the planning process, but budget allocations. Moreover, the bottom-up consensus, and consequently, public acceptance of the project, has not been achieved, which reflects the resistance of the population to participate.[65] In 1999, Turkey was at the bottom of the applicant list for candidacy because of its poor record on human rights. Even though Turkey adopted reform packages in 2003, including issues related to the protection of ethnic minorities and human rights, there is still a gap between theory and practice.[66] In 2004, a major breakthrough on human rights was reached when a famous political detainee was released and ethnic minority languages, including Kurdish, began to be broadcast.[67] Despite the fact that Turkey tries to close the gap in meeting the criteria, it still faces the thorny issue of the Internally Displaced People (IDPs). So far, the Turkish state shows an inability to deal with the large numbers of IDPs coming from all the provinces of Southeastern Anatolia, predominantly Kurdish in terms of resettlement and compensation, a number that is aggravated by the GAP project.[68] According to Kurdish sources from a fact-finding mission carried out in the Diyarbakir and Van provinces in Southeastern Anatolia, the number of IDPs who resettled and were compensated is low to non-existent.[69]

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[64] Carl Dahlman, "Turkey's Accession to the European Union: The Geopolitics of Enlargement," *Eurasian Geography and Economics* (2004), 569.

[65] Ebru Ertugal, "Strategies for Regional Development: Challenges Facing Turkey on the Road to EU Membership," (2002), 13–14.

[66] Fotios Moustakis and Rudra Chaudhuri, "Turkish-Kurdish relations and the European Union: An Unprecedented Shift in the Kemalist Paradigm?" *Mediterranean Quarterly* 16, no. 14 (2005), 85–87.

[67] Kemal Kirisci, "Turkey and the European Union: The Domestic Politics of Negotiating Pre-Accession," *Macalester International* 15 (spring 2005), 53–54.

[68] Alpaslan Ozerdem and Tim Jacoby, "Conflict-induced Internal Displacement," in *Human Rights in Turkey,* ed. F. Zehra and Arat Kabasalat (University of Pennsylvania Press, 2007), 161–163.

[69] Mark Muller and Sharon Linzey, *The internally Displaced Kurds of Turkey: Ongoing Issues of Responsibility, Redress and Resettlement* (London: KHRP, 2007), 16.

From the above discourse on the issue of human rights and Turkey's accession to the EU, it becomes obvious that the Turkish state has taken serious steps toward human rights, but it does not fulfill the criteria yet, which in the future will complicate its full membership. In this literature, the issue of IDPs is addressed, but it lacks an analysis of the numbers displaced by the GAP project and general development projects.

This research paper will attempt to assess the water development project (GAP) in the Southeastern Anatolia region in Turkey in all areas of its involvement, filling the gaps in the above literature. The period of time of its operation is fair enough—1989–2010—to trigger an assessment with respect to its objectives at the local and national levels. Although the project has been implemented within the Turkish sovereignty, it seems that it has brought tension at the international level between the states making up the basin. Moreover, within the context of Turkey's accession to EU, even though the project itself is not in the front line of criticism, it has its own share in the IDPs case, which the literature has not given enough insight. Therefore, an examination at the international level on the above issues, which are of EU concern, will complete its overall picture at all levels.

In doing so, this thesis will assess the progress of the agriculture and energy sectors in respect to the set-up objectives at the local and national levels. Secondly, it will trace down the socioeconomic progress of Southeastern Anatolia by examining macro- and micro-economic indicators with respect to the objectives as they are officially stipulated by the Turkish Republic through its responsible departments of GAP-RDA (GAP-Regional Directive Administration) and the Directorate of State Hydraulic Works (DSI). At this point, the paper will challenge the Turkish notion of "sustainability" in theory and practice as a supplementary task. Lastly, at the international level and within the framework of Turkey's accession to the EU, the thesis will assesses the prospects of Turkey for full membership by examining the status of the regional stability of the basin, as well as the IDPs, and the role of the GAP project to that end.

D. METHODS AND SOURCES

This thesis uses primarily secondary sources to frame its argument. The sources used to frame this thesis come mostly from secondary sources. Also, first-hand empirical studies conducted in the region are from multiple sources for cross-checking purposes in the agriculture assessment sector. Statistical data are used in the thesis from the Turkish Statistical Institute and other sources for cross-checking, to construct economic data in a logical way due to the lack of updated data. Fact-finding missions' results are used, though they span a ten-year period of time without providing updates on the latest situation. However, to carry out an expeditionary mission in the Southeastern Anatolia region is not easy due to the Turkish state's constraints and the increased Turkish military presence, especially in the eastern parts of the region near the borders with Iraq.

Also, in Chapter III, the thesis examines several dams in the GAP project: Keban, Karakaya, Ataturk, Birecik and Ilisu. These dams have significant importance because they were discussed at the international level. Moreover, the Ataturk and Ilisu Dams are still being discussed because they are the largest of the GAP project, and hence, their impacts are a long-term ongoing process even though they were completed in the 1990s, as was the Ataturk Dam. The Ilisu Dam is currently under construction and set to be completed by 2013, but it is the most internationally controversial of all the dams because of its negative impact on the local people and the environment. Lastly, the Keban Dam is not considered by the Turkish state to be part of the GAP project, although it was begun under that notion. However, since it lies in the Southeastern Anatolia region, it has it still has an impact on the region.

Throughout the thesis, the comparative method is widely used, as it is the best method for tracking actual effectiveness and discourse on the GAP project.

In addition to the books, articles, theses and dissertations were used to develop the thesis. Also, websites have been used to supplement it.

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II. AGRICULTURE AND ENERGY EVALUATION OF THE GAP PROJECT

A. INTRODUCTION

Within the context of assessing the GAP project, this thesis challenges the viability of the agricultural and energy sectors of the project, and their contribution to Turkey's GDP growth on a long-term basis, by giving a comparative analysis of these two sectors, as well as some prospects for potential progress.

In this light, the primary objective of the GAP project, which is to bring 1.8 million hectares under irrigation in the Southeastern Anatolia region of Turkey, is not feasible, which undermines not only the success of the project, but also renders unrealistic the GAP Master Plan for development to transform the region into an export base for its agricultural products.[70] Secondly, the major crop, cotton, currently the base of boosting the agriculture in the region, cannot be sustained for a number of reasons. This is of paramount importance, as the calculated increase of agricultural production due to the GAP project contributes to infrastructural development and an increased economy in the region.[71] A possible stagnation in cotton production or resorting to an alternative crop production may impose stagnation on the manufacturing industry or create the need for a fresh infrastructure to cope with the issue of achieving the desired economic development in the region. The economic development to be reached through irrigation and energy production been calculated to produce a rise in the per capita income of 209% and employment opportunities for 3.8 million people.[72] The analysis of the agricultural sector, that follows, makes an assessment of the prospects for further progress by outlining the limited options to that end.

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[70] Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4 (1997), 460.

[71] Unver, "Southeastern Anatolia Project (GAP)," 461.

[72] Republic of Turkey, "Turkey Water Report 2009," *General Directorate of State Hydraulic Works (DSI)* (2009), 38.

In regard to the energy sector, the primary objective of the GAP project is to produce 7,490 MW or 27,387 GWh of electrical power by exploiting the Euphrates-Tigris water through Hydro-Electrical Power Plant dams (HEPPs). This sector is the most important from the perspective of meeting Turkey's ever-growing energy demands. Additionally, the GAP hydro-plants in Southeastern Anatolia are more profitable compared to the agricultural sector in the comparative case to be made at the conclusion of this chapter. However, the energy sector of the GAP project is viable for a medium time period, as the capability of exploiting the waters of the Euphrates and Tigris are finite, which means the GAP, in the passage of time, will not keep up with the accelerating energy demands of Turkey in the long run.

Taking the sectors together, the agricultural sector will continue to lag behind, with respect to the energy sector, in terms of realization, with the energy sector being more profitable. The agricultural sector is not likely to increase its realization rate and reach its goal as a consequence of the multiple problems it has to deal with.. The energy sector will be completed first as it is closing in on its full realization; however, the exploitation of the basin's water for electricity production has a medium-term horizon. After that, the sector will no longer be adequate to keep up with the nation's energy demands.

B. A BRIEF HISTORICAL BACKGROUND OF TURKEY'S AGRICULTURE SECTOR CONTRIBUTION TO GNP (1923–2009) AND THE GAP PROJECT

The agricultural sector has displayed a rather diminishing historical development trend in contributing to the nation's GNP since the declaration of Turkey's independence in 1923. It is a sort of paradox to expect that the GAP project, in the Southeastern Anatolia region of its application, will boost agricultural production in order to contribute nationwide goals of economic development,[73] given the diminishing trend of the sector. The period 1923–1946 was characterized by a development strategy to improve infrastructure and industry in line with Western standards. Then Turkey followed a

[73] Republic of Turkey, "Latest Situation on the Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration-Southeastern Anatolia Project* (2006), 1.

strategy of increased focus on agriculture and mechanization of the sector during 1946–59, which was followed by a period of mixed economic strategy of import substitution, financial liberalization and export-oriented growth until 1997.[74] In general, in the aforementioned period, Turkey displayed a tendency to move away from being agriculturally reliant and rural-based, to being increasingly more industrialized and urbanized, as will be discussed in the third chapter.[75] In particular, in 1923, the agricultural sector contributed to the GNP growth by 43%, while in 1997 the contribution was reduced to 13%.[76] The same trend continued until the year 2007, with a further reduction of 11%.[77] The latest statistics given, for the year 2008, project that the sector contributes to the GNP by 8.9%.[78] It should be noted that the GAP project was officially established with a Master Plan in 1989, and it has been performing from 1994 until the present time. According to the above statistics, from the period 1997–2008, it seems that the diminishing trend of the sector did not reverse despite the implementation of the GAP project.

However, statistics sometimes play tricks on the real situation. After 1997, the GNP experienced a significant increase; in 1997, the GNP measured up to $363 billion. For the years 2007 and 2008, the GNP accounted for $708 billion and $755 billion, respectively.[79] The broadening of the gap between agricultural contribution and GNP growth means the sector lags steadily behind. This fact may be interpreted to mean that GNP growth is due to the productivity of other sectors. For example, the jump in 1997's GNP to almost double in 2007 is not justified as a major contribution of the agriculture sector; the mean average per year growth of the sector is 3.1%, while the annual growth of the GNP for the same period is roughly 9%, as it comes out of the 1997 and 2008

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[74] Utku Utkulu, "The Turkish Economy: Past and Present," in *Turkey since 1970: Politics, Economics and Society,* edited by Debbie Lovatt (Palgrave, 2001), 3.

[75] Mehmet H. Koksal, "Sectoral Analysis of the Turkish Economy," in *Turkey since 1970: Politics, Economics and Society,* edited by Debbie Lovatt (Palgrave, 2001), 41.

[76] Koksal, "Sectoral Analysis of the Turkish Economy," 41.

[77] Republic of Turkey, *Turkey Water Report 2009*, General Directorate of State Hydraulic Works (2009), 24.

[78] Republic of Turkey, "Turkey Water Report 2009," 5.

[79] Scottish Council for Development &Industry, "Trade Visit at Turkey," (2008).

percentages. Moreover, Turkey has not officially announced her 2009 GNP, which is projected to be down, compared to 2008's, by 24.3% to approximately $552.2 billion, due to the global economic downturn.[80] It remains to be seen what percentage of the agricultural sector will be in the 2009 GNP. It is argued, in an analogy to the above statistics, that the sector should be estimated to present a further reduced contribution to 2009's GNP.

In sum, what becomes obvious from the above examination is that the agricultural sector, on a yearly basis since 1963, demonstrates a steady annual growth of a rough mean average of 3%, and at the same time, Turkey's GNP from 1997 onwards galloped at a rough annual pace of 9%. Moreover, the GAP project, for the examined period 1997–2008, did not display any change, either in the average agriculture growth or in the GNP. Therefore, the diminishing role of agriculture in the nation's GNP growth becomes evident. However, it does not mean that agricultural production in the currently irrigated land in the GAP region has not seen substantial increase compared to the pre-GAP implementation years, though it has reached a plateau due to problems analyzed further down.

C. AGRICULTURAL SECTOR IN THE GAP REGION

As to the GAP project, it must bring into irrigation 1.8 million hectares, as the irrigation has the direct result of substantially increasing agricultural production.[81] However, since 1994, the project has demonstrated few advances in the physical realization of irrigation results, and at the same time, problems that inhibit agricultural production. These problems are related to salinity, continuous irrigation, climate change, and water scarcity. The latter has extreme importance for the international relations of the states making up the Euphrates-Tigris Basin—Turkey, Syria, and Iraq. The more water Turkey extracts for irrigation by impounding water behind the dams of the GAP project, the less Syria and Iraq receive. Chapter IV explains in detail the conflict among the states on the international level as a result of the GAP project.

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[80] Daniel Workman, "GDP Estimates for Richest Countries in 2009."

[81] Unver, "Southeastern Anatolia Project (GAP)," 460.

The potential land area that Turkey could exploit economically by irrigation methods reaches 8.5 million hectares; thus, the GAP project applies to 21% of this land.[82] As of 2008, 5.28 million hectares of the total potential land had already been irrigated, and by the year 2023, the rest is anticipated to be developed.[83] In 1994, in the GAP region, 135,000 hectares were under irrigation and another 200,000 hectares were being prepared to receive irrigation.[84] In 1998, the total irrigation scheme reached 174,080 hectares, which means, if compared with the year 1995, from the planned 200,000 hectares in 1994 only 39,000 hectares were brought under irrigation.[85] Until 2006, 236,019 hectares of land were brought under irrigation in the region, while 142,099 hectares were under construction in irrigation schemes. The physical realization of GAP irrigation investments was 13.7 % as of the end of 2005.[86] In 2009, the realization of the irrigation scheme advanced to 15%[87] or 270,000 hectares. The slow pace of the GAP irrigation scheme, during the period 1998–2009, is due to specific factors that present serious problems for further realization of the project, and which may put the whole project into jeopardy.

Further down, on explaining the adverse effects of these factors on the sector, it is argued that the full-scale realization of the irrigation plan may not be feasible. This assessment is very important because irrigating less land will secure more water for Syria and Iraq, who are complaining about the dwindling Euphrates water flow due to Turkey's intervention with dam constructions on the Euphrates and Tigris rivers. On the other hand, the diminution of the irrigated land in the agriculture sector—the main pillar on

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[82] Republic of Turkey, "Turkey Water Report 2009," *General Directorate of State Hydraulic Works* (DSI) (2009), 39.

[83] Republic of Turkey, "Turkey Water Report 2009," 25.

[84] Unver, "Southeastern Anatolia Project (GAP)," 464.

[85] Mehmet Tomanbay, "Turkey's Water Potential and the Southeast Anatolia Project," in *Water Balances in the Eastern Mediterranean,* ed. David B. Brooks and Ozay Mehmet (International Development Research Center, 2000), 12.

[86] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration Report* (June 2006), 4.

[87] Republic of Turkey, "Turkey Water Report 2009," 39.

which economic development will be brought to Southeastern Anatolia—will moderate the optimism for a tremendous economic boost in the area.

Irrigation of the GAP project has to deal with the major challenge of the salinity problem in the most promising area in terms of agricultural production, the Harran plains. The largest part of the irrigation project takes place in the Euphrates basin, which accounts for roughly 1.1 million hectares, while the Tigris basin accounts for .7 million hectares.[88] In the Euphrates basin, a pilot irrigation project commenced in 1994 in the Harran plains. These plains are in proximity to the city of Sanliurfa, where the largest dam of the GAP complex, the Ataturk Dam, provides water supply through two 24.6 km-long tunnel systems to the Harran plains for irrigation.[89]

The significance of these plains rests in the results of agricultural production due to irrigation from the dam. Before the new irrigation method from the dam, the land used for crop production in 1994 was 30,000 hectares, while after irrigation it expanded to 53,420 hectares in 1995. This expansion of irrigated land was accompanied by a substantial increase in cotton production, from 21% in 1994 to 45% in 1995. Moreover, the production value rose from $32 million to $120.6 million in just one year.[90]

On the other hand, all waters used in irrigation contain dissolved salts.[91] The salts accumulate in the soil and poison the root zones of the crops. To flush away the salts, more water is needed, but the excess water still contains salt, so it tends to salinize the groundwater and raise the water table. The more water used, the more saline the ground becomes, and as the water table rises, there is the risk of salty waterlogging, which can destroy an entire region's irrigation-based agriculture.[92] The Sumerians, who lived in this region, had a salinization problem. Evaporating water left behind layers of salt, and rising water tables brought more salt to the surface. One solution to the problem was to leave

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[88] Unver, "Southeastern Anatolia Project (GAP)," 457–8.

[89]. Unver, "Southeastern Anatolia Project (GAP)," 465.

[90] Unver, "Southeastern Anatolia Project (GAP)," 465–467.

[91] Daniel Hillel, *Rivers of Eden: The Struggle for Water and the Quest for Peace in the Middle East* (New York: Oxford University Press, 1994), 54.

[92] Hillel, *Rivers of Eden,* 54.

lands unwatered for many seasons, to let the water table fall and let rain wash the salt down far below the surface. But this would have taken years, so it was not done, and consequently all the crops withered, bringing the Sumerians to the brink of starvation and no inability to fight invaders.[93]

Turkish Advanced Soil Map surveys report that salinity was detected on 1,518,722 hectares of the national land resource, which constitutes a roughly 28.7% of the 5.28 million hectares of already economically irrigable land. Salinity in the GAP area also was detected, and in particular, in the Harran Plain.[94] The plain is the largest in the GAP region and covers 141,500 hectares of irrigable land. The area has shown a propensity to salinity even before the initiation of the irrigation project. In 1987, the total salinized area was 5,550 hectares; after irrigation, upon the completion of the Ataturk Dam in 1993, the salinized area increased to 7,498 hectares in 1997 and to 11,403 in 2000.[95] Moreover, due to excessive and uncontrolled irrigation in the Sanliurfa-Harran Plain, the groundwater table presented serious salinity that reached a total land area of 40,780 hectares in 2001, compared to a land area of 2,747 hectares before irrigation took place. The State Hydraulic Works (DSI) and the General Directorate of Rural Affairs have constructed surface and deep drainage canals on 23,000 hectares to avoid saline waterlogging and thus to mitigate the salinity issue in the Harran plain.[96] During the year 2006, new measures of salinity were conducted in twenty-four wells all over the Harran Plain. Twenty-nine percent of the wells indicated water of very high salinity, which restricts suitability for irrigation and can only be used for plants exhibiting good tolerance to salt.[97] Only 29.2% of the wells indicated medium salinity, while the rest, 41.7%, indicated high salinity, though suitable for irrigation. Overall, according to data obtained

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[93] Macrohistory and World Report, "Sargon and the Vanishing Sumerians."

[94] Berna Kendirli et al., "Salinity in the Southeastern Anatolia Project (GAP), Turkey: Issues and Options," *Irrigation and Drainage* 54 (2005), 116.

[95] Irfan M. Yesilnacar and Said M. Gulluoglu, "Hydro chemical Characteristics and the Effects of Irrigation on Groundwater Quality in Harran Plain, GAP Project, Turkey," *Environmental Geology* 54 (2008), 184.

[96] Kendirli et al., "Salinity in the Southeastern Anatolia Project (GAP)," 119.

[97] Yesilnacar and Gulluoglu, "Hydro chemical Characteristics and the Effects of Irrigation on Groundwater Quality in Harran Plain, GAP Project, Turkey," 191.

from the wells in Harran and the concentrations in chemical substances, 70.8% of the Harran plain is beyond the maximum allowable limit for irrigation; few places can be used for plants with high salt tolerance, and in places with poor drainage, the irrigation suitability is restricted.[98]

Continuous irrigation also stimulates the density of some weed species. Weeds are major constraints that reduce crop yield, since they compete with crops for nutrients, moisture, light and space. The yield reductions due to weed-crop competition depend, mainly on weed species and their densities as well as crop species.[99] A study conducted in the Harran Plain, where cotton is the major crop, showed that in a ten-year span of irrigation in the plain, weed flora has changed. In particular, the study compared the quantity and density of the most common weeds before irrigation started in 1995 with those of 2004. The study showed that there was a substantial decrease in the frequency of weeds due to continuous irrigation, but some of them displayed increased density, and there were a few new ones in the plain, as well. [100] The study based on the results in the Harran plain concluded that monoculture cotton growing leads to the adaptation of certain species of weeds and causes an increase in both their frequency and densities. A solution to the problem would be crop rotation, so as to inhibit a future adaptation pattern of those weeds that show strong tolerance and prolific propensity.[101]

Another factor that will stress the irrigation project in the GAP area and, consequently, agricultural production, is climate change. Global climate change and local climate change caused by the construction of Ataturk, the largest dam in the GAP project,

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[98] Yesilnacar and Gulluoglu, "Hydro chemical Characteristics and the Effects of Irrigation on Groundwater Quality in Harran Plain, GAP Project, Turkey," 195.

[99] Bekir Bukun, "Weed Flora Changes in Cotton Growing Areas during the last Decade After Irrigation of Harran Plain in Sanliurfa, Turkey," *Department of Plant Protection (Faculty of Agriculture)* 37, no. 3 (Harran University, 2005), 667.

[100] Bukun, "Weed Flora Changes in Cotton Growing Areas during the last Decade After Irrigation of Harran Plain in Sanliurfa, Turkey," 668–669.

[101] Bukun, "Weed Flora Changes in Cotton Growing Areas during the last Decade After Irrigation of Harran Plain in Sanliurfa, Turkey," 671.

will act in conjunction and will exacerbate the effects. In general, climate change adversely affects water availability for irrigation purposes, thus, there is a close relationship between the two.[102]

It is projected that by the year 2070, the temperature in Turkey will have increased by 1 to 3^0 C and the relative decrease in crop yield will range between 0 and 2.5%, depending on mitigating measures.[103] A study that uses trend analysis over a 32-year meteorogical observation in the Sanliurfa province of the GAP project showed that there are upward trends in temperature as well as downward trends in wind speed, which result in an increasing evaporation process.[104] There is a cause-effect relationship between total irrigated land and irrigation water requirements. If the total irrigated land increases, irrigation water increases, and the water delivered to farmers decreases.[105] The less water supplied to farmers, the less the yield crop will be.

In a comparative study of twelve irrigation schemes in the GAP region, relative water supply and irrigation ratio were considered for the assessment of the irrigation scheme's performance during the years 1997 through 2001. As the study showed, although more water was used than required in the GAP project, the standard gross value per agricultural production remained low, contrary to expectations.[106] Moreover, in half of the irrigation schemes, the irrigation ratio in 2001 was decreased compared to 1997. The irrigation ratio is the indicator of farmers' willingness to engage in irrigation. According to the study, the decreased ratio is attributed to factors such as national

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[102] Sermet and Derya Onder, "Evaluation of Water resources on the Basis of River Basins and the Probable Changes to Occur in basin Management in the Future Due to Global Climate Change," *Agricultural Structure and Irrigation Department* (Mustafa Kemal University, 2007), 777.

[103] K. Haktanir et al., "Prospects for Desertification Impacts for Turkey, Lebanon, Syria and Iraq," *Department of Soil Science (Faculty of Agriculture-University of Ankara),* 4–5.

[104] Husamettin Bulut et al., "Trend Analysis for Examining the Interaction Between the Ataturk Dam Lake and Its Local Climate," *International Journal of Natural and Engineering Sciences* 1, no. 3 (Harran University, 2008), 117.

[105] Ali Kerem Saysel, "System Dynamics: Systemic Feedback Modeling for Water resources Management," *Institute of Environmental Sciences* (Boğaziçi University, 2008), 41–42.

[106] H. Degirmenci and Hakan Buyukcangaz, "Assessment Schemes with Comparative Indicators in the Southeastern Anatolia Project," *Turkish Journal of Agriculture and Forestry* 27 (2003), 302.

agricultural policy, poor farmer training, water fees, water scarcity, socioeconomics, lack of irrigation infrastructure, landownership and increases in input prices.[107]

In the above study, the predominant crop is cotton, which gives the most profit compared to other crops. In particular, cotton covers, on average, 60% of the area in the twelve irrigation schemes and the average price per unit is roughly 453,330TL/Kg. The grain crop covers 38% of the area and gives roughly 173,390TL/Kg, though the international market price of cotton is higher than that of grain. However, the price for cotton declined from 1997 to 2001: it was $1.72 in 1997 and $0.96 in 2001.[108] What is not mentioned in the study, though it can be implicitly derived from it, is the yield of the two crops per hectare. Cotton covers a larger area and gives more profit than grain, but the latter produces more yield on average; grain produces 425 Kg/hectare; cotton, 325 Kg/hectare.[109] Moreover, the study states that the method it uses to yield the performance results of the irrigation schemes in the GAP area requires few climatic parameters, which are not presented in the output results.[110]

In Turkey, water is a constraint to crop production, especially for arid and semi-arid regions, as is Southeast Anatolia, and for this reason, new water resources are required. Use of non-conventional water, such as drainage water and saline water is considered to be the best solution to the water deficit.[111] Several studies have been conducted to determine the effects of non-conventional water on crop yields. Drainage water use studies have shown that wheat crops are not affected by salinity, while cotton is affected.[112] Experiments with different levels of saline water used in sprinkler irrigation systems have shown that crops such as beans, pepper, lettuce and cotton displayed a

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[107] Degirmenci and Buyukcangaz, "Assessment Schemes with Comparative Indicators in the Southeastern Anatolia Project," 301.

[108] Degirmenci and Buyukcangaz, "Assessment Schemes with Comparative Indicators in the Southeastern Anatolia Project," 297.

[109] Degirmenci and Buyukcangaz, "Assessment Schemes with Comparative Indicators in the Southeastern Anatolia Project," 296 (Table 2).

[110] Degirmenci and Buyukcangaz, "Assessment Schemes with Comparative Indicators in the Southeastern Anatolia Project," 297.

[111] R. Kanber et al., "Unconventional Irrigation Water Use in Turkey," 129.

[112] Kanber et al., "Unconventional Irrigation Water Use in Turkey," 135.

decreased yield as much as 63%, 13%, 6.6% and 5%, respectively.[113] Based on the above results, the experiments indicate that non-conventional water decreases yield and, that vegetables are more sensitive than cotton and wheat.

The importance of the impact of future climate changes on agricultural production and the need for farmers to adapt to changes in future water scarcity in the face of global warming are clearly demonstrated by a study conducted on the Lower Seyhan Irrigation Project (LSIP). This is one of the most important irrigation projects in Southern Turkey; though the Seyhan Basin is not part of the GAP area, it does not mean that farmers in the GAP area will not experience the same problems as those in the Seyhan Basin, as both cultivate the same crops and the Seyhan Basin has the same climate as that of the GAP area.[114] The study tries to figure out the crop pattern to be adopted by farmers based on forecasts for the year 2033 as well as simulation scenarios of global warming and water availability for 2070s. The forecast for the year 2033, in comparison to the 2002 crop pattern, predicts that farmers are more likely to choose high value crops such as citrus, vegetables and fruit, while in 2003, the predominant crop pattern consisted of maize, citrus and cotton.[115] On the other hand, the simulation analysis of a crop pattern of citrus, cotton, vegetables, watermelon and fruit showed more clear-cut results of farmers' preferences. In particular, a reduction of water availability and an increase of water-requiring crops resulted in a lowering of cotton production (49%) and an increase of watermelon (41.4%). Similarly, a further reduction in water availability, not only as a consequence of climate change, but also as a result of further expansion of irrigated land, showed a further decrease in cotton production and an increase in watermelon production.[116] Notably, cotton is a more intensive water consumer than watermelon, while the latter, additionally, is of the same high relative value and high income crop as cotton.

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[113] Kanber et al., "Unconventional Irrigation Water Use in Turkey," 135–138.

[114] Chiesko Umetsu et al., "Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project: A Regional Simulation Analysis with MRI-GCM and CSSR-GCM," 1.

[115] Umetsu et al., "Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project," 3 (Table 2).

[116] Umetsu et al., "Climate Change and Alternative Cropping Patterns in Lower Seyhan Irrigation Project," 9 (Table 6 and Table 7).

Erdoğan said that problems such as falling agricultural efficiency, lack of fresh water, the increasing occurrence of droughts and the lack of investment in agriculture still had not been solved. He continued by noting that such problems would be compounded by the economic crisis. *"Official development assistances and emergency assistance made by developed countries for less developed countries are estimated to decrease due to the economic crisis they went through,"* he said, adding that this would exacerbate the agricultural problems facing the developing world.[117] Indeed, in regard to droughts, in 2008, according to Ali Culu, Sanliurfa's Harran University Faculty Dean Professor, said that Southeastern Anatolia had been affected by the year's drought, adding that six out of the nine provinces of the GAP region experienced serious harvest losses.[118] As far as the lack of investment in agriculture is concerned, the GAP project enjoys adequate funding as it has taken advantage of, on average, 7.1% of Turkey's public funds; however the irrigation projects are only 15% completed, while in the energy sector, 77% have been completed.[119] One interpretation may be that the agriculture sector of the GAP project is not the top priority because of problems in the sector. On the contrary, the energy sector, which will be shown further on in the chapter, seems to have the highest priority, which becomes obvious from the profit of the sector and the investments that the state puts into it.

1. Analysis

During the 1960s, globally, irrigated land expanded dramatically, yielding high production and bringing down food prices. From 1970 to 1982, the irrigated area slowed down its expansion by 2% per year and from 1982 to 1994 it further slowed down by 1.3% per year.[120] Most importantly, projections for the next 25 years predict a further reduction in expanded irrigation by 0.6%, which is still believed to be optimistic.[121]

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[117] Today's Zaman Newspaper, "PM Erdogan calls for world leaders to support small farmers."

[118] Today's Zaman Newspaper, "Drought hits southeastern Anatolia, significantly reducing harvests."

[119] Today's Zaman Newspaper, "New Action Plan for Southeastern Turkey."

[120] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), 12.

[121] Sandra Postel, *Pillar of Sand: Can the Irrigation Miracle Last?* (Norton, 1999), 60.

The irrigation program of the GAP project shows that it follows this same pattern of slowing expansion. In the above-described hectares of irrigated land, from 1994 through 2009, the irrigated land expanded between 1994 and 1995 by 270%. Then it began to decrease: in the period 1995–1998 to an average 9.64%; in the period 1998–2006 an average 4.44%, and for the period 2005–2009 an average 0.32%.

As to the major cotton crop of the GAP region, the Harran plains are facing serious problems in regard to crop productivity. This is of paramount significance because the plains provide most of the land of the GAP region on which rests the economic boost that the Turkish state aspires to bring to underdeveloped Southeastern Anatolia.

Firstly, the comparison between the Seyhan and Harran irrigation projects are closely connected to each other because before the cotton crop was cultivated in the Harran, it was the dominant crop in the Seyhan area. However, because of the projected adverse warming conditions and water availability, the cotton crop passed to the Harran plains and the Seyhan area switched to other non-monoculture crops. This may be interpreted to mean that in the future there will very likely be a shift in the Harran from the monoculture of cotton to a variety of agricultural crops including cotton, because the cotton crop is the major contributor to the already established agro-industry in Sanliurfa city. If this is the case, then a reduced value of the current agricultural production of the GAP region should be expected, since cotton is the highest value crop in terms of global prices.

Secondly, cotton is suspended from the global fluctuation in market prices, which may render it unfavorable to the farmers' preferences, as there are alternative high priced crops. Undoubtedly, the boost in the total production of the Harran plain after irrigation took place was tremendous. The production value skyrocketed from $18 million U.S. in 1998 to $172 million U.S. in 2000, and then leveled out to an average $120 million U.S. for the period 2001–3.[122] , Recently, the GAP region has been considered a possible golden opportunity if olive production is pursued and global oil consumption rises

[122] Natalie Arsenault et al., "People and Place: Curriculum Resources on Human-Environmental Interactions," *Hemispheres* (Texas University, 2007), 231.

sharply.[123] Moreover, the trend in imports and exports of agricultural products that Turkey followed the past thirty years shows that she is turning out to be agriculturally dependent on imports, as the domestic demand cannot be met by production. Agricultural product exports were around $2 billion and its imports were only around $50 million at the beginning of the 1980s. In 30 years, these figures have reached $4.3 billion and $4.5 billion, respectively, which mean a two-fold rise in exports and 90-fold rise in imports. Among the imports, cotton comes from Greece and the United States.[124]

Thirdly, salinity, climatic change, and water scarcity as a due to climatic conditions put heavy load on agriculture production in the Harran Plain. The cotton crop seems to be the most vulnerable, because of water scarcity, and then because of salinity and climatic changes, while some crops are vulnerable primarily to salinity and climatic changes and to a lesser degree, water shortages, while others demonstrate the same attitude as cotton or wheat's tolerance to all adverse factors.

Fourthly, surface irrigation, which is less productive than groundwater due to the opportunity for better control of the water used at farm level, is the predominantly employed technique in the GAP region.[125] This practice is considered unsustainable, as it results in soil salinity and waterlogging, thus making agriculture impossible or capable of only a limited yield. Large-dam irrigation is under hopeful expectations, mainly due to increasing water competition for efficient irrigation, while use of groundwater and direct river-water abstraction without the mediation of dam and traditional harvesting systems are gaining in importance.[126] Turkey has the alternative of resorting to a micro-irrigation practice, which reduces water use and keeps salinity at lower levels, however, without preventing the process from continuing at a slower pace though, over the long term. The practice achieves higher gains in a range of 70–90%, but it is extremely capital

[123] Today's Zaman, "Olive a golden opportunity for GAP region."

[124] Hurriyet Daily News & Economic Review, "Grain silo Turkey becomes agriculture importer."

[125] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), 13.

[126] World Commission on Dams, *Dams and Development,* 138.

intensive.[127] For example, drip irrigation typically costs $1,200–2,500 per hectare, which means that if 10,000 hectares of the current 270,000 were to use drip irrigation, this would cost $12–25 million.[128]

In conclusion, the agricultural sector of the GAP project seems to have run into multiple problems. Most of them are unpredictable and irreversible, such as salinity, which has put severe constraints on the expansion of the irrigated land. The goal of bringing 1.8 million hectares under irrigation and transforming Southeastern Anatolia into an agricultural export-base is not realistic.

D. ENERGY DEMANDS IN TURKEY AND HYDROPOWER SHARE

Given its continued economic growth, Turkey's energy needs are ever increasing and rendering her an energy importing country; roughly 75% of her needs are covered through imports.[129] In 2000, Turkey produced 26.89 mtoe (million ton oil equivalent) of energy from primary domestic sources, while the annual consumption was triple the domestic production. Moreover, projections of Turkey's energy needs for the year 2020 show that the same ratio of 1:3 will continue to persist in greater figures.[130] Additionally, the ratio of energy consumption and GNP, which is 0.37 in Turkey, lags behind that of developed industrial nations and the EU, which are 0.66 and 0.57 respectively. If Turkey is devoted to catching up to developed countries and detaching from developing ones, energy consumption must rise significantly, thus putting this sector at the top of Turkey's national agenda.[131]

The gap between energy demand and supply will increase as Turkey faces a rapidly rising demand for energy of 8% per annum. Domestic production based on fossil fuel (hard coal, lignite, oil and gas) is insufficient to meet the growing energy demand. Among renewable sources, the most important is hydropower, which coupled with

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[127] World Commission on Dams, *Dams and Development,* 141.

[128] Sandra Postel, *Pillar of Sand: Can the Irrigation Miracle Last?* (Norton, 1999), 174.

[129] Kamil Kaygusuz and Murat Arsel, "Energy Politics and Policy," in *Environmentalism in Turkey; Between Democracy and Development,* ed. by Fikret Adaman and Murat Arsel (Ashgate, 2005), 149.

[130] Kaygusuz and Arsel, "Energy Politics and Policy," 151.

[131] Kaygusuz and Arsel, "Energy Politics and Policy," 155.

lignite, contribute to the production of 50% of the electrical energy consumed in Turkey., Domestic renewable resources for electrical production are more efficient than those of fossil fuels, with the exception of gas. [132]

Renewable resources constitute 35% of energy production and 13–15% of energy consumption. The renewable energy potential of Turkey consists of 122.3 TWh/year of hydropower, 50 TWh/year of wind power, and even less from solar energy, biomass and geothermal power.[133] The following table provides the shares of Turkish renewable sources to primary energy supply compared to other countries and the world:

Table 1. The shares of primary energy supply from different renewable sources by countries (2001) [134]

Ren. CRW[b]	Hydro	Wind	Solar/Tide	Geothermal		Total
World	79.9	26.4	0.2	0.3	3.2	100
OECD	53.6	34.8	1.0	1.0	9.6	100
EU	58.9	33.8	2.7	0.6	4.0	100
USA	67.6	17.5	0.5	1.4	13.0	100
Turkey	67.4	22.1	0.1	3.1	7.4	100

[a] *Source*: Adopted from IEA (2003a).
[b] CRW: Combustible renewable and Waste.

In regard to the production of electrical power, during Ataturk's time, substantial capital was absorbed in the form of fixed investments in railroads, roads, harbors and power (electricity).[135] Since the 1930s, Turkey has continued to invest heavily in its infrastructure, while the second half of the 1950s witnessed a substantial expansion in roads and dams. However, the expansion of power facilities has not been sufficiently rapid to meet the country's needs.[136] Yet Turkey has an active and growing capacity for

[132] Cengiz Sayin et al., "Assessing of Energy Policies Based on Turkish Agriculture: Current Status and Some Implications," *Energy Policy* 33, no. 8 (December 2005), 2364.

[133] Sayin et al., "Assessing of Energy Policies Based on Turkish Agriculture," 2365.

[134] Sayin et al., "Assessing of Energy Policies Based on Turkish Agriculture," 2363.

[135] M. Singer, "Atatürk's Economic Legacy," *Middle Eastern Studies* 19, no. 3 (July 1983), 304.

[136] Singer, "Atatürk's Economic Legacy," 305.

hydropower, which takes the shape of hydroelectric power plants established by damming rivers. As displayed in the following table, electricity consumption makes up 13.4% of final energy consumption, while coals and lignite make up 21.4%, yet electricity showed a rise of 4.1% compared to a decrease of 0.4% of coal and lignite in the years 1990–2000.

Table 2. Final Energy Consumption (in Mtoe) [137]

	1990	**(%)**	**2000**	**(%)**
Oil	19.93	47.1	26.54	43.1
Natural gas	0.78	1.9	5.09	8.3
Electricity	3.93	9.3	8.27	13.4
Coals and lignite	9.27	21.8	13.19	21.4
Non-commercial	7.21	17.0	6.46	10.5
Other	1.26	3.0	2.00	3.2
Total	42.34	100	61.54	100

Source: TUBITAK (2003).

E. HYDROPOWER CONTRIBUTION IN TURKEY'S ENERGY SECTOR: THE GAP HYDROPOWER PLANTS

Hydropower constitutes 24.7% of the total electricity production, while thermal power constitutes 75.3%. As seen in Table 2, industry consumes 38.4% of electrical energy production, households 34.0%, transportation 19.7%, and agriculture 4.8%.[138] Hydropower has been set up as a national program since the 1930s, when Turkey started the construction of 202 large and 317 small dams, of which 114 operated as hydroelectric power plants (HEPPs). Until the mid-1980s, plans for dam construction continued to materialize not only for technical reasons, but also for political ones. The Kurdish

[137] Kaygusuz and Arsel, "Energy Politics and Policy," 153.

[138] Kaygusuz and Arsel, "Energy Politics and Policy," 154.

insurgency in Southeastern Turkey urged the construction of many dams in the area to bring development to an underdeveloped area, as was the case in the Southeastern Anatolia area of Turkey.

The Southeastern Anatolia Project (GAP), at its early stage, was set up to provide and secure an electricity supply and to bring economic development to the area. In reaching the final objective of installing HEPPs of 7,490 MW capacity, the project has been realized at 74%—5,513 MW[139] and by 2013 it will further advance to roughly 88% with the construction of the second biggest dam—Ilisu—ongoing. The developmentalist view on the GAP, characterized by an aggressive support for HEPP constructions, remains constant in modern Turkish history. Suleyman Demiral, Turgut Ozal and lately Tayyip Erdogan, all Prime Ministers of Turkey, emphasized the construction of dams to convert water into energy for the sake of energy independence and to close the gap of energy imports.[140]

The total hydropower electrical production gross potential of all twenty–six of Turkey's basins amounts to 432,981 GWh/year, of which 140,000 GWH/year is technically and economically exploitable.[141] Some studies have estimated the latter figure to be even higher. In particular, according to DSI, the economically feasible potential of Turkey's basins for electrical production may reach 188,169 GWh/year.[142]

Whatever the figure, both the Euphrates and Tigris rivers in the GAP area, can contribute to electricity production with an exploitable 37.6%, which is the biggest share of Turkey's gross potential as the remaining water is shared among the other twenty-four basins. The GAP hydropower project consists of 11 (HEPPs) dams on the two rivers. Currently eight such dams are completed and operational, two are under construction, and two more are in the planning stages. Table 3 shows the hydro dams, both completed and those awaiting construction.

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[139] Republic of Turkey, "Latest Situation on Southeastern Anatolia Region: Activities of the GAP Administration," (2006), 3.

[140] Kaygusuz and Arsel, "Energy Politics and Policy," 159.

[141] Republic of Turkey, "Turkey Water Report, 2009," *General Directorate of State Hydraulic Works (DSI)*, 2009, 20.

[142] E. Toklu et al., "Energy Production, Consumption, Policies and Recent Developments in Turkey," *Renewable and Sustainable Energy Reviews* 14 (2010), 1174 (Table 4).

If all hydropower dams were completed within the GAP area, the overall electrical production would reach 20% of the total economically exploitable electrical production of Turkey, which is a substantial amount if we consider that the land of application of the GAP project covers a mere 10% of Turkey's surface area.[143,144] In 1998, the GAP project covered only 15% of the total electrical demand in Turkey, which means that there have been significant advances in the past decade.[145] On the other hand, the demand for electric energy for 2010 has been estimated to be roughly double that of 2006, and the projections for 2020 show a doubling of the 2010 demand. Table 4 depicts the outstanding increasing demand for energy as a result of Turkey's economic growth and population increase.[146]

Table 3. GAP Hydroelectric generating plants in Southeastern Anatolia[147]

Name Facility	Owner	Province	River	Capacity (MW)
Ataturk	DSI	Sanliurfa	Euphrates	2400
Karakaya	DSI	Diyarbakir	Euphrates	1800
Birecik	DSI	Sanliurfa	Euphrates	672
*Batman	DSI	Batman	Batman	198
Karkamis	DSI	Kahramanmaras	Euphrates	189
Dicle	DSI	Diyarbakir	Tigris	110
Kralkizi	DSI	Batman	Tigris	94
Ilisu	DSI	Batman	Tigris	1200UC
Sanliurfa	DSI	Sanliurfa	Tigris	50
Cizre	DSI	Mardin	Tigris	240UC
Silvan	DSI	Diyarbakir	Tigris	240P
Kayser	DSI	Diyarbakir	Tigris	90P

Sources: Balat, 2004
P: Planned, UC: Under Construction
*Batman River is a tributary to Euphrates

143 Republic of Turkey, "Turkey Water Report, 2009," 40.

144 Republic of Turkey, "Turkey Water Report, 2009," 36.

145 Swiss Federal Institute of Technology (ETH), "Sustainable Management of International Rivers; Case Study: Southeastern Anatolia Project in Turkey, GAP," *Center for International Studies* (Zurich, 2001), 14.

146 Kamil Kaygusuz, "Sustainable Energy, Environmental and Agricultural Policies in Turkey," *Energy Conversion and Management* 51 (2010), 1077.

147 Mustafa Balat, "Turkey's Hydropower Potential and Electricity Generation Policy Overview: Beginning in the Twenty-First Century," *Energy Sources* 27 (2005), 953–954.

Table 4. Electricity production vs. consumption in Turkey[148]

Hydraulic Electricity	2000	2002	2004	2006	2010	2020 (GWh)
Production	309121	33732	46142	44371	65387[149]	97456[150]
*Total Consumption	128295	132553	150018	174637	300000	580000

*electricity produced by thermal, hydropower and imports.

F. HYDROELECTRIC EFFICIENCY AND FINANCING

The hydro energy realization ratio in the GAP project has reached 75% (7.49 GW) within the project itself.[151] Upon completion of the GAP hydropower project, the total installed capacity for electricity generation will account for 10.2 GW, which constitutes roughly 20% of the total gross hydroelectric energy potential of all twenty-six main river basins of Turkey.[152] Moreover, Turkey's current total hydroelectric production amounts to 44371 GWh/year for 2006, and the current hydroelectricity production in the GAP area constitutes 45% of the total.[153] The total cost of the GAP project was set at $32 billion, of which $20 billion have been invested from Turkey's public resources, while another $3.5 billion will be invested by the private sector.[154] The hydroelectric dams alone have cost roughly two-thirds of the thus far invested $20 billion, as the following Table 5 shows:

[148] Kaygusuz, "Sustainable Energy, Environmental and Agricultural Policies in Turkey," 1077.

[149] Ayhan Demirbas and Recep Bakis, "Turkey's Water Resources and Hydropower Potential," *Energy Exploration & Exploitation* 21, no. 5&6 (2003), 409 (Table 3).

[150] Demirbas and Bakis, "Turkey's Water Resources and Hydropower Potential," 409.

[151] Republic of Turkey, "Turkey Water Report, 2009," 40.

[152] E. Toklu et al., "Energy Production, Consumption, Policies and Recent Developments in Turkey," *Renewable and Sustainable Energy Reviews* 14 (2010), 1175–1176.

[153] General Directorate of State Hydraulic Works (DSI), "Energy."

[154] Ercan Ayboga, "Report About the Impacts of the Southeastern Anatolia Project (GAP) and the Ilisu Dam on the Downstream Countries Iraq and Syria," Initiative to Keep Hasankeyf Alive (August 25, 2009), 3.

Table 5. Table 5 Construction Costs of the Hydropower dams of the GAP project

Name Facility(HEPP)	Construction Cost (US$)
Ataturk	2–4 billion[155]
Karakaya	1.5billion[156]
Birecik	1.25 billion[157]
Karkamis	170 million[158]
Dicle	120 million[159]
Ilisu	1.5 billion[160]
Total	*9.1–11.15 billion*

Taking into account the above-mentioned issues, the contribution of hydropower energy to the Turkish economy in the GAP project can be estimated. In particular, the value of hydroelectric energy per kWh is about 9 cents (US$), and given the current electricity production of the GAP hydropower plants, the output amounts to $2.46 billion/year.[161]

In 2006, the commitment of the Turkish state to invest in the energy sector was obvious when 26% of a $30 billion investment was directed to the energy sector. The Turkish electricity sector received a share of 51% of the above investment for generation, transmission lines and other related equipment.[162]

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[155] John Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Project* (Southern Illinois University, 1991), 40.

[156] Patrick McCully Silenced Rivers: The Ecology and Politics of Large Dams (Zed Books, 2001), 266 (Table 9.3).

[157] Econ Pöyry AS, "A Review of Private-Public Partnership Models in Hydropower Projects," *Econ-Report No. 200–065,* 45.

[158] Jack Kalpakian, *Identity, Conflict and Cooperation in the International River Systems* (Ashgate, 2004), 104

[159] Kiska Construction Cooperation, Database of Dams.

[160] Tahir Ongur, "A Defective Project: Ilisu Dam," 4.

[161] Dogan Altinbilek, "The Role of Dams in Development," *Water Science and Technology* 45, no. 8 (2002), 180.

[162] Toklu et al., "Energy Production, Consumption, Policies and Recent Developments in Turkey," 1180.

1. Analysis

From Table 4, it becomes obvious that in the future, hydropower electrical production will not be sufficient to meet the growing Turkish domestic needs. Among the twenty-six basins of the country, the Euphrates-Tigris hydropower potential amounts to one-third of the total, and it is found in the Southeastern Anatolia region. Hydropower production in the world is set to grow slowly up to 2030, but its share in global electricity generation will drop from 7% to 6%.[163] As a result, Turkey will follow the same trend: its electricity demand will grow 6–8% yearly. However, due to the high hydropower potential of the country, Turkey is committed to reducing electricity imports to eliminate her financial deficit in the sector. Currently, Turkey is importing electricity, and has signed an agreement with its neighbor, Bulgaria, which will allow Turkey to purchase 33.7 billion kWh of electricity over the 10-year period from 1999 to 2009.[164] The GAP region's hydropower plants have played a significant role in the electricity import/export balance.[165] In 2000, Turkey imported 3786GWh and exported only 413GWh, while in 2006 a remarkable reverse trend was noticed, as imports reduced to 573GWh and exports reached 2236GWh. The construction of the Ilisu Dam, which began in 2008, will contribute significantly to electricity production, as it will be the second largest after the Ataturk Dam.

Since hydroelectric energy is a renewable source, it can easily be exported to EU-member countries where use of clean, green energy is encouraged. A project is currently underway to link Turkey's electricity grid to neighboring Greece's, which is negotiating an eventual link to the pan-European electricity network, UCTE. Italy, a market ten times greater than Greece, is already connected to a Greek power network via an existing underwater power line and it will be accessible to Turkish energy exporters once Turkey's connection to Greece is completed.[166]

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[163] Kamil Kaygusuz, "Sustainable Energy, Environmental and Agricultural Policies in Turkey," *Energy Conversion and Management* 51 (2010), 1077.

[164] U.S. Department of Energy, "An Energy Overview of the Republic of Turkey."

[165] GAP-GIDEM, "Competitiveness Agenda for the GAP Region," *GAP Entrepreneur Support Centers Project* (October 2007), 104.

[166] GAP-GIDEM "Competitiveness Agenda for the GAP Region," 105.

However, there is a weak link in the electrical grid of Turkey, which affects production: the status of the transmission lines. The present energy transmission lines will not be able to carry all the produced power, while the existing construction facilities (equipment and manpower) will not be sufficient to construct all projects within ten years' time.[167] While the transmission energy loss is 2.5–3% within the world standards, the distribution losses are much too high at 15%.[168] If Turkey reduces the distribution loss, it will add more to total electricity production.

Turkey is set to allocate huge investments in the energy sector for the period 2007–2020. Around $72 billion in investments are planned to be allocated to the energy sector, of which 82% will be absorbed by the electricity sector, 9% by gas, 6% by oil, and 1% by solid fuels.[169] This means that, annually, the electricity sector will receive $4.5 billion, an increase compared with the $3.9 billion in 2006. The GAP project will absorb a substantial amount of the annual investment, as the second hydropower plant is already being constructed with a calculated cost of $1.5 billion and is set to be completed by the year 2011.[170]

G. CONCLUSIONS: COMPARING THE AGRICULTURAL AND ENERGY SECTORS OF THE GAP PROJECT

Juxtaposing the agricultural and energy sectors of the GAP project, the agricultural sector is lagging far behind the energy sector in physical realization, and with the likelihood for this trend to be continued until the full completion of the energy sector. In general, agriculture in Turkey has been declining since the establishment of the Turkish state. The agricultural sector of the GAP project has been realized at 15% after sixteen years (1994–2009) of operation. The reason for this is that it is facing severe challenges of salinity, continuous irrigation, climatic change and water scarcity, which

167 James McKeigue, "Turkey Opens Electricity Markets as Demand Grows," *Power*, 2009.

168 E. Toklu et al., "Energy Production, Consumption, Policies and Recent Developments in Turkey," *Renewable and Sustainable Energy Reviews* 14 (2010), 1180.

169 Toklu et al., "Energy Production, Consumption, Policies and Recent Developments in Turkey," 1180.

170 John C. K. Daly, "Turkey's GAP Project: A Mixed Blessing for Country and Neighbors," *Eurasia Daily Monitor* 5, no. 135 (2008).

have slowed down the expansion of irrigated land. This slowdown follows the globally diminishing trend of agriculture. Due to these challenges, the realization of 1.8 million hectares under irrigation cannot be achieved. Moreover, the agriculture in the GAP region is facing global market competition with its cotton crop, which plays a significant role in Turkish revenues.

As to contribution to national growth, agricultural production was unambiguously boosted due to the new irrigation method from dams, but only for a short period of time (1994–2001), which happens to coincide with the first years of the project's irrigation function. Despite the fact that the revenues from the production from 1994 up to 2003 reached the accumulated amount of $1.07 billion,[171] compared with the yearly revenues of $2.46 billion of the energy sector, it seems that agriculture does not pay off as well as energy does.

Official documents relating to agriculture sector production issued by the GAP-RDA administration mention the yields in production up to the year 2001–02. Few of these published between the period 2004–8 and older academic articles relating to the same sector mention the specific period of time, 1994–2002, as an example of the success of the agricultural sector of the GAP project. It is argued that the production of cotton in the GAP region reached a plateau after the 2001–2002 for the aforementioned reasons. Moreover, the cotton production value in 1995 was $91,000[172] (cotton price $0.91)[173] and in 2001 was $453,330 (cotton price $0.96), while in 2005 it was $732,662[174] (cotton price $1.12), which when converted into 2001 prices becomes $627,996. From the above figures, it becomes evident that by comparing the values of the crop between the years 1995 and 2001, indeed cotton production in the GAP region skyrocketed, despite the marginal fluctuation of its price. During the period 2001–2005 and taking into account the fluctuation of the price, crop production was increased by roughly 50% compared

[171] Natalie Arsenault et al., "People and Place: Curriculum Resources on Human-Environmental Interactions," *Hemispheres* (Texas University, 2007), 232.

[172] Unver, "Southeastern Anatolia Project (GAP)," 466 (Table 5).

[173] National Cotton Council of America "Major Factors Affecting World Cotton Price Behavior."

[174] GAP-GIDEM, "Competitiveness Agenda for the GAP Region," *GAP Entrepreneur Support Centers Project* (October 2007), 54 (Table 4-2).

with an increase of over 400% in the 1995–2001 period. Given the 0.32% rate of the expansion of the irrigated land after 2005, it may be anticipated that the rise of crop production must be marginal compared to the period 2001–2005 where the rate of the expansion of the irrigated land was 4.44% on average per annum.

The above account is of great importance for further evaluating the performance of the GAP project in the agriculture sector. According to the World Commission of Dams, large irrigation projects typically fall short of physical targets, failing to recover their costs and being less profitable in economic terms. In particular, indicators for the potential performance of large irrigation projects include physical performance of the area irrigated, crop yields and value of production, as well as net financial and economic benefits.[175]

On the other hand, the ever-increasing demands for Turkey's energy render the sector the most valuable, and the GAP project with its hydroelectric power plants plays a significant role in Turkey's economy. According to the General Directorate of Hydraulic Works (DSI), the dams dedicated to hydropower electricity production demonstrate full cost recovery and multiple increases in production value compared to the agricultural sector, in the short and medium-term period of time. For example, Karakaya (1987) and Ataturk (1992) dams fully recovered their cost in an average time span of four to nine years after their construction. Moreover, their production value surpassed their cost of construction two-fold in an average period span of eight to eighteen years, depending on the size of the dam. Additionally, the accumulated profit since the year of its completion for each of the above dams has been up to 2003, $5.8 and $4.2 billion, respectively, with an average price of 5 cents per KWh.[176] This means that only two of the eight hydropower electric dams account for $1.125 billion per year profit on average.

However, in the long term, the nation's hydropower capacity for electricity production is set to be exhausted. The GAP hydropower project is near completion, and along with it, the technically and economically exploitable water of Turkey's

[175] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), 42.

[176] General Directorate of Hydraulic Works (DSI), Energy Sector.

Southeastern Anatolia region reaches its limits. In the long term, the energy sector of the GAP project will play a diminishing role in the production of electricity, to the benefit of the nation.

Chapter III delineates the orientation of the GAP project towards industrialization and infrastructure, which implicitly justifies the declining role of agriculture, as selective macro and micro-economic indicators indicate the socioeconomic development of the GAP project within the context of human development sustainability.

III. THE GAP PROJECT AND SOCIOECONOMIC RESULTS IN THE AREA OF IMPLEMENTATION: SOUTHEASTERN ANATOLIA

A. INTRODUCTION

This chapter will challenge, from the theoretical and factual perspective, the philosophy of sustainable human development on which the GAP project rests. This objective is important as it aims at the well-being of the whole of Turkey, in general, and of the people in the region, in particular.[177] In doing so, the chapter will provide a definition of sustainable development, which incorporates three dimensions—environmental, social, and economic—all equally developed to produce sustainability. Then it will examine the socioeconomic dimension within the context of the well-being of the people in the GAP region. It will give a quantitative, followed by a qualitative, analysis of GAP project progress in specific sectors, which have been set as main objectives of the GAP Master Plan to be achieved for sustainable development: to provide better social services, education, health, employment opportunities, migration control,, infrastructure and industrial development, and to attract qualified personnel to the area.[178]

This chapter will also touch upon the issue of environmental impact in the region as a consequence of the construction of dams by examining the Ilisu, Cizre and Ataturk Dams in the GAP region to outline the environmental policy of the Turkish state.

The main method to be used in addressing the above issues will be the comparative case method by which the progress of the project in its main objectives of the GAP Master Plan will be the focus. Two time frames: 1980–2001 and 2001–2009 will be juxtaposed. The former time frame is important because it gives information on the socioeconomic status of Southeastern Anatolia before the official establishment of the

[177] Republic of Turkey, "Turkey Water Report 2009," 38.

[178] Unver, "Southeastern Anatolia Project (GAP)," 459–460.

GAP administration in 1989. Additionally, this period is important because in 1990, the biggest dam—Ataturk—was completed, and by 1994, irrigated land was increasing fast and boosting agriculture production, contributing to the economic lifting of the area. The significance of this period is in the operation of the Ataturk Dam, because it is by far the most complex and ambitious part of the GAP project, to meet the project's goals.[179] The second period will be used for comparison with either the short-term period, 1994–2001, or the pre-GAP period. In this way, there will be a measurement of the progress of the GAP project within its time frame of operation, 1994–2009, as well as the magnitude of the progress in respect to the pre-GAP period. Lastly and most importantly, the chapter will rely, mainly, for reference and comparisons, on the related data to the level of development of the region before the project's operation and projected data for the year 2005, stated by the GAP-RDA president.

B. DEFINITION OF SUSTAINABILITY: THE THEORETICAL PERSPECTIVE

Sustainability means attending to and combining the important areas of environment, economics, and social equity. Without a coordinated effort addressing each of these functions, sustainability and sustainable development cannot be addressed or adequately achieved.[180]

The concept was coined explicitly to suggest that it was possible to achieve economic growth and industrialization without environmental damage.[181] However, in the process of economic growth through industrialization, environmental degradation was unavoidable. Therefore, the core of mainstream sustainability thinking has become the idea of three dimensions: environmental, social and economic sustainability. In Figure 1, there is a multi-schematic representation of sustainable development as 'pillars,' concentric circles, and as interlocking circles. The message conveyed by these three

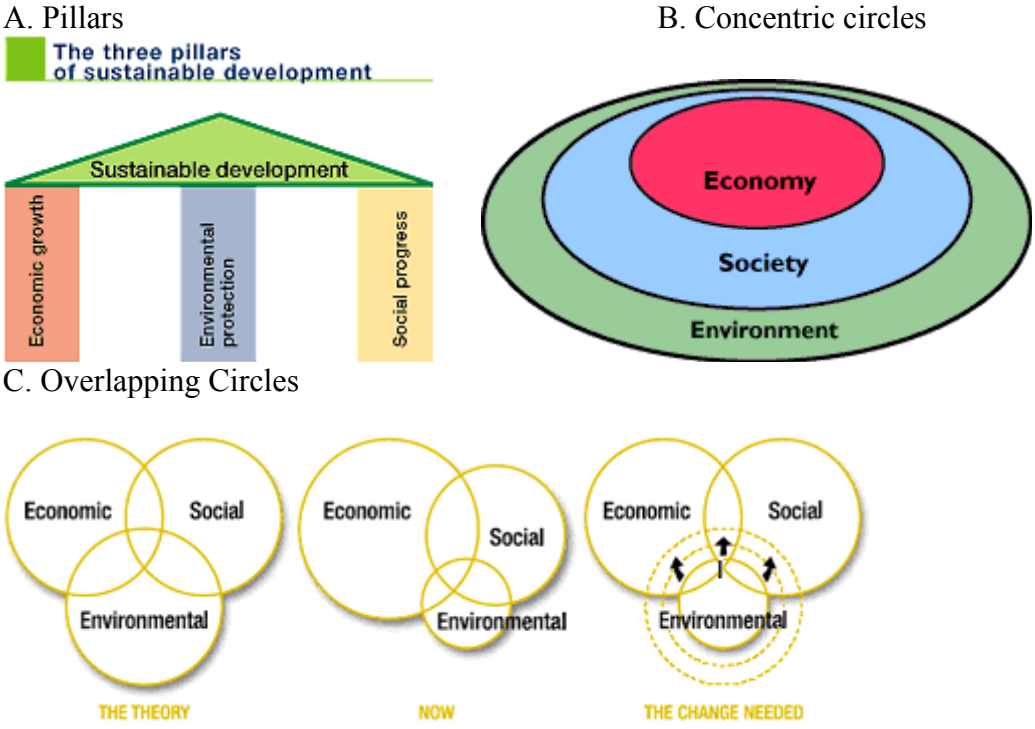
[179] John Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Project* (Southern Illinois University, 1991), 220

[180] Appalachian State University, "Sustainable Development."

[181] W. M. Adams, "The Future of Sustainability: Re-thinking Environment and Development in the Twenty-First Century," *Report of the IUCN Renowned Thinkers Meeting 29–31 January 2006* (May 2006), 1.

representations, and made more vivid by the interlocking circles model, is that the three objectives need to be better integrated, with action to redress the balance between dimensions of sustainability (Figure 1).[182]

Development: Pillars, Circles, Interlocking Circles



The three pillars of sustainable development, from left to right, the theory, the reality and the change needed to better balance the model

Figure 1. Three Visual Representations of Sustainable Development

A second definition of sustainability focuses on the ethical ideas based on the obligations toward future generations and presupposes intergenerational equity. Ethicists would agree to a definition similar to this: *"Sustainability means that present and future persons have the same right to find, on the average, equal opportunities for realizing*

182 Adams, "The Future of Sustainability: Re-thinking Environment and Development in the Twenty-First Century," 2.

their concepts of a good human life."[183] Accordingly, sustainable *development* is development that reaches or maintains a sustainable state. Technological improvement and economic growth are components of sustainable development only if they contribute to a sustainable state.[184]

According to OECD, a third definition of sustainability is based on the energy and agriculture sectors. An energy supply sector can best advance sustainable development by producing and delivering secure and environmentally friendly sources of energy and by increasing the efficiency of energy use. These qualities are frequently stated in terms of energy security, economic development and environmental protection. The current methods of meeting these criteria involve ensuring fuel diversity, supplier diversity, sound transmission and distribution infrastructure, efficient conversion and delivery technologies, and low- and zero-carbon technologies.[185]

On the other hand, the latest global projections of macroeconomic and demographic trends have challenging implications for the sustainability of world agriculture. Again, three dimensions of sustainability are involved: economic, environmental and social. The complexity of addressing agricultural challenges is compounded by the need to encourage sufficient food production, protect the environment, and ensure sustainable rural livelihoods.[186]

Of the three definitions, the first one focuses on the balance to be achieved for sustainable development among the three dimensions while economic and social growth take place. In this case, emphasis is put on economic and social growth, and that environmental protection should follow suit. The second definition conveys a moralistic concept of sustainability by emphasizing the value of the equity right of forthcoming generations to have the same opportunity for well-being. This is also stated by the

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[183] Adams, "The Future of Sustainability: Re-thinking Environment and Development in the Twenty-First Century," 2.

[184] Konrad Ott, "The Case for Strong Sustainability," *in Greifswald's Environmental Ethics* edited by K. Ott and P. Thapa (Greifswald: Steinbecker Verlag Ulrich Rose, 2003), 59.

[185] Organization for Economic Co-operation and Development (OECD), "OECD Contribution to the United Nations Commission on Sustainable Development 15" (2007), 9.

[186] OECD, "OECD Contribution to the United Nations Commission on Sustainable Development," 9.

Republic of Turkey. The third definition implies the question of how efficient state activities are, in agricultural and energy sectors, to promote or maintain the sustainability described in the first holistic definition. Though this definition could also be applied in the case of the GAP project, as the development of land and water resources for irrigation and electricity production is the backbone of the GAP project,[187] the official reports of the Republic of Turkey emphasize the human development issue as the following statements concerning the scope of the project witness:

> The project plans to develop the long ignored Southeastern Turkey, where a major outflow of population has been combined with high levels of unemployment and political instability. (GAP 2003)[188]

> The Southeastern Anatolia Project (GAP) seeks to uplift the income levels and living standards of people living in the region by mobilizing and utilizing resources existing in the region, to remove interregional disparities and to contribute nationwide goals of economic development and social stability. As such it is a very important and comprehensive project with international implications. (GAP-RDA 2006)[189]

> The project rests upon the philosophy of sustainable human development, which aims to create an environment in which future generations can benefit and develop. The basic strategies of the project include fairness in development, participation, environmental protection, employment generation, and infrastructure development. This massive development effort gives priority to economic, social and cultural advancement and well being of the whole country in general and of the people of the region in particular. (GAP-Directorate of State Hydraulic Works (DSI) 2009)[190]

From the above more or less overlapping and not overriding statements, I argue that within the broad context of sustainability, the GAP project aims primarily at social and economic development, and secondarily at environmental development, which is in

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[187] Unver, "Southeastern Anatolia Project (GAP)," 472.

[188] Alexandra M. Pool and Velma I. Grover, "GAPs in the Dialogue of Governance: Conflicting Ideologies of Development in Turkey," in *Water: Global Common and Global Problems* edited by Velma I. Grover (Science Publishers, 2008), 377.

[189] Republic of Turkey, Prime Ministry Southeastern Anatolia Project Regional Development Administration (GAP-RDA) "Latest Situation on Southeastern Anatolia Project Activities of the GAP Administration" (2006), 1.

[190] Republic of Turkey, "Turkey Water Report 2009," *General Directorate of State Hydraulic Works* (2009), 38.

contradiction, at least in theory, with the three dimensional equity of sustainability. It remains to be seen, in reality, whether the GAP project has progressed in its objectives to claim sustainability.

C. SUSTAINABILITY FROM THE FACTUAL PERSPECTIVE

1. Massive Migration

One component of sustainability in the GAP project is the control of migration. Massive migration flow from Southeastern Anatolia to Western Turkey may undermine the sustainability of society and the development of the region, thus it needs to be regulated on the basis that the project will generate income to alleviate economic inequalities between regions.[191] Table 6 provides statistics on the issue of the evolution of migration from the area. It is obvious at first glance that after the year 2001, out-migration has been reduced radically in the area, though it continues at a slower rate.

Similarly, Table 7 displays the evolution of out-migration, on average, for the calendar year 2008–2009 in juxtaposition to the rate of out-migration of each province of the GAP project for the year 2000. Noticeably, Gaziantep is the exception to the other provinces as it has been experiencing in-migration at a greater rate than out-migration, but at a reduced rate in relation to 2008 and 2009: 34,125 out-migrated and 36,075 in-migrated, respectively.[192] Specifically, the trend of out/in migration in Gaziantep had been improving through the years 1980–2000; the rate of out-migration was 1.8% in the years 1975–80, 5.2% in the years 1980–85, 0.5% in the years 1985–1990 and reversed to an in-migration of 3.1% in the years 1995–2000.[193] As of 2000, Gaziantep retains roughly the same rate.

[191] Unver, "Southeastern Anatolia Project (GAP)," 469.

[192] Turkish Statistical Institute.

[193] Turkish Statistical Institute.

Table 6. Southeastern Anatolia (Regional) Migration Statistics (2000–2009)[194]

Years	Population	In-migration	Out-migration	Net-migration	Net-out migration rate
2000-2001[195]	6,604,205	212,425	422,315	-209,890	-31.8
2001	7.4	132,328	188,111	-57,583	-7.56[196]
2007-2008	7.46	118,611	171,910	-53,299	-7.12
2008-2009					

Source: State Institute of Statistics (SIS)

Table 7. GAP Provinces Migration Statistics (2008–9)[197]

GAP Provinces	Population ABPRS 2009	In-migration	Out-migration	Net-migration	Net-migration rate
Total Turkey	72,561,312	2,069,262	2,069,262	0	0,00
Mardin, Batman, Şırnak, Siirt	1,969,896	46,556	75,088	-28,532	-14.38 (-67.58)* (-45.16)* (+21.77)* (-75.06)*
Şanlıurfa, Diyarbakır	3,128,748	56,552	76,050	-19,498	-6.21 (-38.9)* (-40.04)*
Gaziantep, Adıyaman, Kilis	2,364,249	44,864	50,133	-5,269	-2.23 (+3.13)* (-70.23)* (-38.9)*

Source: Turkish Statistical Institute

*Each figure in parenthesis represents one province, while figures without asterisks represent the average value of all the provinces they refer to. Figures in parenthesis refer to the year 2000

194 Turkish Statistical Institute.

195 Turkish Statistical Institute.

196 Turkish Statistical Institute.

197 Turkish Statistical Institute.

However, it must be said that the figures for the year 2000 are a bit deceiving. During the decades 1980–2000, there was a massive deportation of Kurds in the Southeastern Anatolia region due to Turkish military aggression against the PKK insurgency. According to Kurdish organizations, half of the Kurdish population was forced to leave the southeastern provinces between 1982 and 1997. The Turkish government reported that through 1997 the total number reached the figure of 336,717 (U.S. State department 1998).[198] On the other hand, the KHRP[199] gave an estimate of displaced Kurds at approximately of 3,750,000. The IHD[200] and the UNHCR[201] reported in 1996 that 2,540 villages had been destroyed and 3 million people displaced since 1984 as a consequence of both Turkish military aggression and economic hardship.[202] Kolars and Mitchell's report of the average-sized village in Turkey of 650 habitats seems to be closer to the KHRP's report.[203] Therefore, it is not clear to what extent the GAP project has reversed and controlled the out-migration in the region. Instead, it can be inferred that there is a tendency toward stabilization of the out-migration, though a negative sign still persists in the above statistics.

2. Urbanization-Rural Migration

Urbanization and rural migration are two components of the sustainability of the GAP project that must interact in harmony within the projected population size; urbanization is desirable, while rural migration should slow down.[204] The optimum combination of urbanization was set for the year 2005 at 66% for a population size of ten

198 Kristiina Koivunen, "The Invisible War in North Kurdistan," (2002), 164.

199 Kurdish Human Rights Project (KHRP).

200 Institute of Human Development (IHD).

201 United Nations High Commissioner for Refugees (UNHCR).

202 Koivunen, "The Invisible War in North Kurdistan," 165–166.

203 Kolars and Mitchell, *The Euphrates River and Southeast Anatolia Development Project* (Southern Illinois University, 1991), 33 (Table 2.5).

204 Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4 (1997), 461.

million people along with a fertility rate of 2.49%.[205] The urbanization of the area has been speeding up since the 1960s. Table 8 provides the rate of urbanization in the GAP region

Table 8. Urbanization rates in the GAP Region (1960–2009)

	1960[206] rate (%)	1985	1990[207]	2000[208]	2009*
Southeast Urban	29.8	49.9	55.7	63	68.37
Southeast Rural	70.2	51.1	44.3	37	31.63

Source: own calculation
*Address-Based Population Registration System Population Census and the author's own calculations. http://www.turkstat.gov.tr/Kitap.do?metod=KitapDetay&KT_ID=11&KITAP_ID=139

The increase in population and the fertility rate in the GAP region are given in Table 9 and Table 10, while in Table 11, the annual growth rates of districts are juxtaposed with those of towns and villages for each province of the GAP region for comparison:

Table 9. Total fertility rate (%)[209]

	1980	1985	1990	2000	2009*
Turkey	3.41	2.59	2.65	2.57	2.21
GAP Region	4.63	4.02	4.37	4.07	< 2

Source: SIS, 1997, 23

*Turkish Statistical Institute

[205] Unver, "Southeastern Anatolia Project (GAP)," 462–463 (Table 3).

[206] Servet Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: its Context, Objectives and Prospects," *Orient* 37, no. 1 (1996), 62.

[207] Unver, "Southeastern Anatolia Project (GAP)," 462.

[208] Ahmet Ozer, "Influences of SAP as A Development Project to the Urban and Regional Development in the EU Integration Process," *International Journal of Human Sciences* 4, no. 1 (2007), 7.

[209] Gülen Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia: A Case Study for Turkey," *Turkish Studies* 5, no. 3 (2004), 9.

Table 10. Increase in population in GAP Region (rates)[210]

	1970–75	1975–80	1980–85	1985–90	1990–2000[211]	2000–09*
Turkey	2.5	2.07	2.45	2.17	1.8	0.78
GAP Region	3.37	3.63	3.75	3.51	2.5	1.44

**Source*: Turkish Statistical Institute, GAP-RDA (2006) and the author's own calculations

Table 11. Annual growth (rate) in villages and district/cities (2008–9)[212]

GAP Provinces	city and districts	town and villages	Average Urban vs. Rural growth rate*
Adiyaman	2.59	-2.08	2.032 vs. -0.67
Diyarbakir	2.6	-1.25	
Gaziantep	3.06	-1.18	
Mardin	-0.06	-3.91	
Siirt	2.74	-0.97	
Sanliurfa	1.55	3.66	
Batman	3.69	0.53	
Sirnak	0.26	0.28	
Kilis	1.86	-0.115	

**Source:* Turkish Statistical Institute and the author's own calculations

For the decade 1990–2000, the annual urban increase in population in the GAP region was 3.7%, while the increase in its rural population was 0.7%.[213] On the other hand, from Tables 8 and 11, we can infer that the urban process has exceeded the optimum goal and is still growing, while rural growth has begun to decline. Tables 9 and

[210] Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: its Context, Objectives and Prospects," 62. (Table 1)

[211] Ozer, "Influences of SAP as A Development Project to the Urban and Regional Development in the EU Integration Process," 8.

[212] Turkish Statistical Institute.

[213] Ozer, "Influences of SAP as a Development Project to the Urban and Regional Development in the EU Integration Process," 8.

10 indicate that the population did not reach the projected figure for 2005; moreover, it had not reached it in 2009 (see Table 6). The imbalance between urbanization and rural growth within a specific population size will put heavy pressure on cities, diminish rural growth, and thus, challenge the sustainability goal of the project.

3. Income and Unemployment

The index of GDP per capita is important for displaying actual development in the GAP region. The goal of the GAP project development was to more than quadruple the GDP per capita in the region, which was $637[214] in 1985 on the basis of removing interregional disparities, and bridge the economic gap between the Southeastern Anatolia region and the rest of Turkey.[215] Although it is extremely difficult to retrieve data for the GAP region from official sources after the year 2000, due to a lack of statistics, we can infer some conclusions based on past data and the current GDP performance in Turkey. Table 12 displays how per capita income in Turkey and the GAP region has evolved. Also, the Southeastern Anatolia region is considered one of a group of economically lagging areas in Turkey, made up of the Black Sea, East and Southeast Anatolia regions, which displayed, on average, a GDP per capita of 60% of Turkey's total.[216] However, the UNDP estimates a much lower GDP percentage, of some 40%, for the same group.[217]

Additionally, according to Theil Indices, which measure more precisely than Gini, the coefficient of interregional economic inequalities, the Black Sea region shows the

[214] Unver, "Southeastern Anatolia Project (GAP)," 461.

[215] GAP-Regional Development Administration (GAP-RDA, 2006), 1.

[216] World Bank Document Report No. 39194-TR, "Turkey Country economic Memorandum: Sustaining High growth: Selected Issues," (April 2008), 128.

[217] United Nations Development Programme (UNDP), "Assessment of Development Results: evaluation of UNDP Contribution (Turkey)," Evaluation Office (May 2010), 8.

largest GDP per capita contribution to the nation by 5%, compared to the rest of the lagging group, of which Southeastern Anatolia contributes the least, by 2%, and Eastern Anatolia contributes more with 2.7%.[218]

Table 12. GDP per capita actual growth (USD) and percentage

	1988(1)	**1990**(2)	**1995**(2)	**1998**	**2001**(4)	**2006**	**2008**(6)	**2009**(6)
Turkey	1350	2655	2727	3213(3)	2146	4221(5)	12100	11200
GAP Region	637	1569	1428	1735(7)	1186	-	5200(5)	-
Percentage(%)	47.18	59.09	52.36	54(4)	55.26		42.97	-

Sources:
(1)I.H. Olcay Unver, 462.
(2) Gülen Elmas, 7 (Table 3).
(3) http://www.romturkonline.com/English/Turkey/chp3.htm
(4) GAP-RDA (June, 2006), 2.
(5)Croatian Med Journal http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2205969
(6) www.turkey-now.org
(7) CIA, https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html

From the above, and supported by the data in Table 12, it seems that for the period 2001–2009, the GDP per capita in the GAP region, in relation to nation's GDP, has worsened compared to the period 1988–2001. Significantly, it seems that the GDP per capita in the GAP region is even worse than that of the pre-GAP project period. However, from the nine provinces of the GAP region, two present some dynamic for further development. Gaziantep displays a GDP per capita of 74.20% of that of Turkey, and Diyarbakir 61.20% (2001 prices).[219] The following macroeconomic indicators on unemployment and poverty may offer a clearer picture on economic development in the region.

[218] World Bank Document Report No. 39194-TR, "Turkey Country economic Memorandum: Sustaining High growth: Selected Issues," 152 (Table 5.14).

[219] World Bank Document Report No. 39194-TR, 136 (Table 5.7).

With regard to unemployment, which will be used interchangeably with employment, the GAP project aims at providing 3.8 million jobs in various sectors by the year 2005, compared to 1.5 million jobs in 1985.[220] This statement has been used in official documents from 1997 up until 2009.[221]

Unemployment rates in Southeastern Anatolia, juxtaposed to national rates, are extremely difficult to find in official announcements; additionally, there is a great divergence in the numbers displayed by newspapers and scholars compared to those of the Turkish Statistical Institute, which does not provide regional comparisons among the provinces or relative status for each province within Turkey. According to the Turkish Statistical Institute, the unemployment rate for the year 2009 was 13%, diminishing to 12% for the year 2010, while the labor force participation increased from 47.3% to 49% for the same period.[222] Other resources report relative figures on the issue for the years 2008 and 2009 as being very close to Turkish statistics. Newspaper sources report the same figures and with respect to the southeast region, rates are much higher than the national average. Lastly, there are sources validating the Turkish Statistical institute, but they present a sort of hidden unemployment, especially among young populations. Table 13 gives an overall status of Turkey and the GAP region's unemployment trends

[220] Unver, "Southeastern Anatolia Project (GAP)," 461.

[221] Republic of Turkey, "Turkey Water Report 2009" (2009), and GAP-Regional Development Administration (GAP-RDA, 2006).

[222] Turkish Statistical Institute.

Table 13. Compared Unemployment in Turkey and GAP Region (1980–2010)[223]

Average	1980	1985	1990	1995	2000	2005	2008	2009	*2010*
Turkey %	3.6	4.7	5.4	7.2	8.9	10.3(1)	11 (11.2)(2)	13 (14.1)(2)	*12 (14.6)(5)*
GAP region %	4.3	6.1	7.8	10.4	12.1	14.5(3)	17.4(4)	-	-
Relative Increase	0.7	1.4	2.4	3.2	3.2	4.2	6.4–6.2	-	-

Sources: SIS (2003a), Turkish Institute of Statistics (2009)
(1)World Bank Document, Report No. 39194-TR, (April, 2008), 105 (fig. 4.7)
(2)CIA, https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html
(3) http://www.kurdish-info.eu/media/files/GABBReport.pdf
(4)http://www.upi.com/Business_News/2010/03/03/
(5)UNDP Activity Report (January-December, 2009), 3.
http://www.undp.org.tr/povRedDocuments/WE_Activity_Report_January_December_2009_final.pdf

The World Bank reports that the 2005 figure represents the age group 15–64, while the group 15–24 represents a higher national unemployment rate of 19.1%. Also, the CIA reports 4% underemployment for the year 2008. For the period 2005–9, the unemployment rate of the age group <25 increased from 17.4 to 22.4%.[224] In the cities of Şanlıurfa and Diyarbakir, in the GAP region, unemployment is reported to be 18.8%.[225] The highest unemployment, at 22.1%, has been noticed in the southeastern province of Şırnak. The lowest participation rates were found in Diyarbakır (26.9%), Siirt (27.2%) and Şırnak (29.8%), while the average for Turkey is 46.9%.[226] Kurdish sources align closely with all the above sources except the Turkish Statistical Institute; the Kurdish sources report that the participation in the labor force of the GAP region by the young group is an extremely low 30%, (2005), while for the region, the age group 15–64

[223] Enver E. Dincsoy and Fumikau Ichiminami, "An Assessment of the Southeastern Anatolia Region in Turkey in Terms of the Sustainable Development Targets," *Journal of the Faculty of Environmental Science and Technology* 11, no. 1 (Okayama University, 2006), 77 (fig. 2).

[224]European Commission (EUROSTAT). Statistics.

[225] Hurriyet Daily News and Economic Review, "Turkey ranks second-worst in European unemployment."

[226] Today's Zaman Newspaper, "Provincial unemployment figures reveal drastic economic disparity in Turkey."

participation is 40% (2005) still below the national average. Moreover, the same sources report that Şanlıurfa and Diyarbakir had unemployment rates of 12% and 15%, respectively, for the year 2005.[227]

In conclusion, the Southeastern Anatolia region appears to be stricken by increased unemployment and low participation by the populations in the labor force of the region, far below the national levels. Moreover, from Table 13, unemployment both in Turkey and Southeastern Anatolia has been constantly increasing since the year 1980. However, the rate of increase in the GAP region has been greater than that of the nation. Significantly, during the period 1995–2000, which marked the first five years of the initialization of the GAP project, the unemployment rate did not recede, and neither did it advance; it remained at the same level. Additionally, from the year 2000 up to 2008, unemployment started increasing at a greater rate, despite the thirteen-year period of the GAP project's operations. We can estimate that for the years 2008–2010, unemployment in the GAP region ranges from 19% to 22%, according to published sources, thus increasing the relative gap between the region's and the nation's absolute percentages of unemployment. It seems impossible to have achieved the goal of 3.8 million jobs with such a high unemployment rate in the region.

4. Poverty

Poverty in the Southeastern Anatolia region is an issue not highlighted in the official documents related to the objectives of the GAP project; rather, it is overshadowed by more frequently used terms such as "economic development" and "uplifting the income levels and living standards of the people in the region." However, it is a necessary condition to be mitigated for a sustainable society.[228] While unemployment and migration fall directly into the project's objectives, poverty is an issue correlated to unemployment and migration, and it counts as an index of the well-being of the people in the region.

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[227] Mustafa Sonmez, "Eastern and Southeastern Anatolia: Socioeconomic Problems and Recommended Solutions," *A Research by the Union of Southeastern Anatolia Region Municipalities and Diyarbakir Metropolitan Municipality (*Diyarbakir, 2008), 11.

[228] Unver, "Southeastern Anatolia Project (GAP)."

In Turkey, individual poverty based on expenditure was 15.06% in total, 8.01% in urban areas and 31% in rural areas.[229] In the Eastern and Southeastern regions, poverty rates were 43.8% and 46.64%, respectively. While the monthly expenditures for families in the big cities of Turkey reaches $800, for cities like Mardin, Batman, Sirnak, and Siirt of the GAP region, expenditures reach $320US in 2004 prices. [230] As to the total expenditures in the GAP region during 2003–2006, 4.7% was done by households, which dropped to 4.4% for the period 2006–2008, thus it can be inferred that the above monthly family expenditure has been reduced.[231]

A recent survey by Bosporus University in Diyarbakir, which enjoys a richer status than other cities of the GAP region, covered 5,706 households in five of Diyarbakir's poorest neighborhoods and found that 309 households (5.4%) had no income at all, while 1,787 (31.3%) had total incomes of less than $200 per month. Only 933 households (16.4%) had total monthly incomes of more than $400, which is considered the poverty line in Turkey.[232]

Based on the above statistics, poverty has not been alleviated in the GAP region.

5 Impact of Dams on the Southeastern Anatolia Region (GAP)

In general, the environmental impacts of dams, due to their construction and operation, are numerous, including upstream and downstream changes in morphology, hydrology, water quality, and including local disruptions in the riverine ecosystem.[233] In the case of Turkey and the GAP project, there is a gap between what the state heralds in environmental sustainability and what it applies on the ground in the Euphrates-Tigris basin.

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[229] Turkish Statistical Institute, Press Release on Results on the 2008 Poverty Study No 205 (December 2009), 2.

[230] Esra Saatci and Ersin Akpinar, "Assessing Poverty and Related Factors in Turkey," *Croatian Medical Journal (Review)* 48 (2007), 632 (Table 2).

[231] Turkish Statistical Institute, "Household Consumption Expenditures (Regional)."

[232] The Jamestown Foundation, "New Turkish Study Highlights Poverty among Kurds," *Eurasia Daily Monitor* 4, no. 186.

[233] Patrick McCully, *Silenced Rivers: The Ecology and the Politics of Large Dams (*Zed Books, 2001), 30–31.

The construction of dams, the installation of equipment for hydro-power electrical production and irrigation projects, and the preparation of a large area to support a dam—depending on its size—transform the natural scene of the selected site as well as the habitat of many species. For the GAP region, projects are lacking an Environmental Impact Assessment Study (EIAS) for the preservation, conservation, and protection of the environment due to construction of GAP dams. Instead, as of 1993, several studies focused only on the Tigris basin were made to reduce the adverse environmental effects and remake the environment within the context of sustainable environmental development. However, these studies were related to urban infrastructure, agro-industries, transportation, and social services and not to the dams of the GAP project itself. On the other hand, EIASs for the irrigation schemes of the GAP project were made to minimize disruption to the environment in which impacts could be pinpointed and mitigation measures defined.[234]

In 2002, the GAP Regional Development Administration (GAP-RDA) launched "Wildlife Project," which was completed in 2004, for the assessment of biodiversity in the GAP region and the improvement of natural habitats.[235] In 2008, the EIA Regulation was amended and called for the participation of all local people to state their opinions about water development activities. Their opinions would affect the final decision about the project: either the project would be withdrawn or be revised to fit public opinion.[236] The Turkish state gives such substantial attention to the preservation of the environment that it has in its constitution Article 56 declaring that "Everybody has the right to live in a healthy and well-balanced environment" and that "The development of the environment, the protection of the environmental health and the prevention of environmental pollution are the mission of the Government and the Citizens." For the above reasons, in 2003, the Ministry of the Environment and Forestry was established,[237] not only for the GAP

[234] Unver, "Southeastern Anatolia Project (GAP)," 478–9.

[235] Republic of Turkey, "Turkey Water Report 2009," *General Directorate of State Hydraulic Works (DSI) (*2009), 43–44.

[236] Republic of Turkey, "Turkey Water Report 2009," 27.

[237] Republic of Turkey, "Turkey Water Report 2009," 31.

region, but for the whole country. The General Directorate of State Hydraulic Works, with the following statement gives a vivid account of the significance of dams for the nation:

> Dams are very important for Turkey because they aren't only contributing to the wealth and health of the people, they are also considered the best means of repairing the destruction made by the uncontrolled water power on earth. Destructions by the uncontrolled water power are not only to the lands or the plants, but also to the people around there, to the climate, to the wildlife, in summary to the whole nature. If they are not properly controlled, they create social and economic disasters. On the other hand, Turkey has been badly suffering from long lasting draughts. We have lost our forests, our vegetation, and most of our wildlife habitat, mostly because of land erosion created by our uncontrolled rivers.[238]

In addition to the above general statement, in the GAP region, the extremely high seasonal and annual flow fluctuations of the Euphrates and Tigris Rivers were of great concern to Turkey because they affected winter and summer crops as the flows occurred inopportunely to provide water for the crops. Sedimentation was another concern. The key solution to these issues was the construction of large dams and their associated reservoirs.[239]

This said, and from the perspective of environmental sustainability, however, the Turkish state purports to be inconsistent with what it manifests on that issue. Specifically, the theoretical and administrative background has been carried out and established, but some facts on the ground spoil the state's image on the international level.

On the international level, two dams on the Tigris River, in the GAP region, Ilisu and Cizre, have raised concerns on the part of Iraq in regard to the issue of downstream impact. First and foremost, the Environmental Impact Assessment Study (EIAS) for both projects is incomplete as it does not take into account downstream problems such as adverse water supplies, water quality, erosion, and the ecological impact in Iraq. Despite the meetings that have taken place between Turkey and Iraq over water-related issues in

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[238] Republic of Turkey, "Response to the Final Report of World Commission On Dams," *General Directorate of State Hydraulic Works (DSI).*

[239] Ozden Bilen, "Prospects for Technical Cooperation in the Euphrates-Tigris Basin," in *International Waters of the Middle East,* edited by Asit K. Biswas (Oxford University Press, 1994), 99.

the Euphrates basin, the Turkish government refused to speak about the dams.[240] However, construction of the Ilisu dam has been initiated; construction of the Cizre dam has not. Moreover, from 1989 up to now, the Turkish state has undertaken twenty-six national environmental projects of which twenty-five have been completed; Cizre's environmental project with its EIAS has been ongoing since 1999.[241]

Most importantly, the international community, through the words of the European Commission and on the basis of Turkey's candidacy for joining the EU, is rather critical of Turkey's record of dealing with environmental issues as represented by the construction of the Ilisu Dam. In regard to environmental protection measures for the area to be affected by the dam, Turkey has not taken grave steps. Moreover, the EU seems to take a more holistically critical stance towards Turkey's environmental policies. During the screening process of Turkey's accession, the European Commission noted the issues on which Turkey seems awfully inadequate, including its Environmental Impact Assessment Directive, dam construction, waste management, environmental protection procedures, water quality and international conventions, in addition to EU framework directives.[242]In the case of dams on the Euphrates and Tigris rivers, international environmental groups such as Friends of the Earth and the World Wildlife Fund have been against the GAP project, compelling Turkey to take environmental concerns seriously, as linking laws and protection are key requirements of Turkey's accession to the European Union.[243]

In the same vein, the Ataturk and Birecik dams' environmental projects, with their respective EIASs have not been mentioned among the nation's environmental projects in the period 1989 to the present, though the dams were completed in 1990 and 1999,

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[240] Ercan Ayboga, "Report about the Impacts of the Southeastern Anatolia Project (GAP) and the Ilisu Dam on the Downstream countries Iraq and Syria," (2009), 12–13.

[241] SU-YAPI Engineering and Consulting Co. in Turkey, "Environmental Projects within the last Ten Years."

[242] Hurriyet Journal, Daily News and Economic Review, Cengiz Aktar, "Environmental Issues and tales of Hasankeyf."

[243] Alexandra M. Pool and Velma I. Grover, "GAPs in the Dialogue of Governance: Conflicting Ideologies of Development in Turkey," *in Water: Global Common and Global Problems*, edited by Velma Grover (Science Publishers, 2006), 382.

respectively. Only one such project is mentioned as having been completed during the 1998–1999 period in the GAP region, which was related to urban sanitation and planning only.[244]

As far as the Ataturk Dam was concerned, fieldwork and laboratory work were conducted between May 1992 and March 1993, and the report was finalized by 1994. According to the report, the stock of existing species in the reservoir of the dam was very low, so other species were introduced to enrich the fisheries in the dam with very good results in reproductive capability.[245] However, the report does not mention what the initial population and species were before the construction of the dam in order to gauge the magnitude of the possible adverse impact caused by the construction of the dam. Moreover, in 1996, a report that addressed environmental policies to control hillside/shoreline erosion and sedimentation to prevent water quality degradation in the reservoir of the dam was neglected; no measures had been taken as of 2002.[246]

An evaluation of the above information determines that Turkey seems to have taken some regulatory actions to preserve the environment in the GAP region at the level of irrigation and infrastructure projects, but not before the construction of the dams, which necessarily cause major transformation to their surroundings. Environmental projects accompanied, by their respective EIASs, do not seem to be the case for the GAP project. The establishment of the Ministry of the Environment and Forestry in 2003, and the regulations that followed, indicate that Turkey has not put environmental issues at the top of the GAP project agenda. Related international pressure must have played an important role in forcing Turkey to proceed with environmental regulations. On the other hand, rhetoric of the sort that environmental protection is the responsibility of the nation and individual citizens is not consistent with the practices. The reasoning for that

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[244] SU-YAPI Engineering and Consulting Co. in Turkey, "Environmental Projects within the last Ten Years."

[245] Cecilia Tortajada, "Evaluation of Actual Impacts of the Ataturk Dam," *International Journal of Water Resources Development* 16, no. 4 (2000), 458.

[246] Pool and Grover, "GAPs in the Dialogue of Governance: Conflicting Ideologies of Development in Turkey," 383.

discontinuity is based on the Turkish state's belief that people are able to develop protective sensitivity towards the natural environment only after they have achieved higher standards of living.[247]

In sum, the environmental protection in the GAP region comes second in priority in regard to the socioeconomic objectives of the project. By definition, sustainability cannot be achieved if one of its three dimensions lags behind, and this is the case for the Southeastern Anatolia region.

6. Public and Industrial Infrastructure

a. Public Infrastructure

There is little doubt that profound changes have been taking place in the GAP region, as far as infrastructure is concerned, within the context of social human development and sustainability. Due to the rapid rate of urbanization, towns and cities in the Southeastern Anatolia region have come under pressure to accommodate the incoming rural population, an issue that calls for extensive public construction. In 1985, in the GAP region, only 66.8% of rural areas had electricity, while 35.6% had access to drinking water.[248]

Building roads and industrial and housing projects, and ensuring that the dams will be accompanied by water treatment, wastewater and a sewage project, constitute the first steps towards upgrading the infrastructure. A number of cities were the first in line to benefit from the various related projects. Sewage network implementation projects have been completed to some degree in Adiyaman, Batman, Gaziantep, Diyarbakir, Mardin, Siirt, Sirnak and Sanliurfa.[249]

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[247] Pool and Grover, "GAPs in the Dialogue of Governance: Conflicting Ideologies of Development in Turkey," 382.

[248] Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4 (1997), 463 (Table 3).

[249] Anthony Derisiotis, "Turkish Development Policy in the Southeast: Reconstructing or Deconstructing the Kurdish Social Structure," in *Defensor PACIS Defense Analyses Institute* 22 (March 2008), 99.

The "GAP Region Transport and Infrastructure Project," dated 1991, consists of 134 sub-projects, fully operational and committed to developing sewage, drinking water supply, wastewater treatment, solid waste management, electricity and telecommunication for some 45 settlements in the GAP region. The first of its kind and a very innovative pilot project is the "Treatment of Urban Wastewater in Small and Medium Size Settlements and Its Use for Agricultural Irrigation in the GAP Region," It aims at tackling, through recycling, the problems emanating from the heavy pressure put on available water resources by rapid population growth, industrialization, uncontrolled and unplanned urbanization.[250] In addition, there is the "GAP Urban Sanitation and Planning Project" with the objective of providing integrated planning for the socioeconomic development of the GAP region and ensuring that urban infrastructure can cope with steadily growing urban centers and urbanization in the region. The above projects are still pilot-scale projects, and it remains to be seen whether and when they will be expanded and how much of the GAP region will be covered.[251]

Transportation projects and the road network have been developed. There are 28,420 km of village roads, of which 26.7% are asphalted, 49.2% stabilized and 20.7% leveled. Over 98% of villages have been connected to the main road network. The 196 km Sanliurfa-Gaziantep motorway costing $580 million has been completed and constitutes the main transport artery in the region. Also, six airports are operating in Adiyaman, Batman, Sanliurfa, Diyarbakir, Gaziantep, Mardin, and Siirt. These do not include the Sanliurfa international cargo airport. Two main railway projects were planned in 1991, the 469 km long "Southern line" with a 137 km-long Nizip-Birecik-Sanliurfa line, and the "Mardin Free Trade Zone railway." However, due to resource constraints, there has been no spending on the "Southern Line."[252]

In sum, the GAP project has gone far towards fulfilling its promise in regard to infrastructure, a trend that continues to characterize the developmental issue of the GAP project in other sectors later on in the chapter.

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[250] Derisiotis, "Turkish Development Policy in the Southeast," 99.

[251] Derisiotis, "Turkish Development Policy in the Southeast," 99.

[252] Derisiotis, "Turkish Development Policy in the Southeast," 100.

b. Industry and Sustainability of the GAP Region

The development of industry in the region constitutes the very basic strategy formulated in the Master GAP Plan. Agro-related industries and those based on local resources are the backbone for the promotion of manufacturing.[253] Additionally, the Master Plan calculated a three-fold increase; this was the conservative scenario, while the optimistic one was a five-fold increase in the labor force of the industry by 2005 compared to the figure of 78,000 in 1985.[254] From 1980–85, the manufacturing industry of the region contributed only 2% of the nation's total value-added. In this sector, the GAP project demonstrates outstanding results in terms of industrial development (Table 14) which is promising for economic development. However, industrial development is not equally shared among the nine provinces; there seems to be development disparity within the region that may inhibit further socioeconomic development in the GAP region in the future. Given that the Southeastern Anatolia region (GAP) belongs to the "lagging group" in development, the GAP project, according to GAP-RDA, seeks to remove inter-regional disparities within Turkey within the frame of economic development and social stability.[255] However, the regional issue of development disparity in Turkey seems to be imported as intra-regional (among the nine provinces) within the Southeastern Anatolia region (GAP), which contradicts what the GAP seeks and so may jeopardize the broader context of the socioeconomic sustainability of the project.

Since 1982, government actions have emphasized industrial development using local agricultural products as raw materials. In particular, incentives were offered to encourage the manufacturing industry in the region, with results of high productivity in revenues, despite the few numbers of workers. The region aspired to be the supplier of

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[253] Servet Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey: Its Context, Objectives and Prospects," *Orient* 37 (1996), 75.

[254] Mutlu, "The Southeastern Anatolia Project (GAP) of Turkey," 75.

[255] Republic of Turkey, Prime Ministry Southeastern Anatolia Project Regional Development Administration (GAP-RDA) "Latest Situation on Southeastern Anatolia Project Activities of the GAP Administration" (2006), 1.

the entire Middle East Market.[256] Table 14 gives an account of the development of the manufacturing industry in the GAP region, by province, from 1980 to 2009.

Table 14. Number of Manufacturing Establishments by Province in the GAP Region (1980–2009)

Province	Number of Establishments	
	1980(1)	2009(2)
Gaziantep	4696	9961
Diyarbakir	1051	2913
Adiyaman	577	1846
Sanliurfa	1642	3908
Mardin	878	1283
Batman	226	900
Kilis	N/A	636
Sirnak	13	434
Siirt	325	360

Sources: (1) Kolars and Mitchell, 52–55. (SIS, 1982) and the author's own calculations
(2)Turkish Statistical Institute
http://tuikapp.tuik.gov.tr/Bolgesel/degiskenlerUzerindenSorgula.do?durum=acKapa&menuNo=263&altMenuGoster=1&secilenDegiskenListesi=2011,2013

In 2007, the manufacturing industry was at the top with an allocation of 34.09% of overall value added factor cost.[257] In 2003, the value added was 38.67% and in 2004 was 38.32%, while employment in the manufacturing industry reached the fairly high levels of 32.64% and 31.82%, respectively, of Turkey's entire industry.[258] The master plan of the GAP project estimated an increase in manufacturing employment of around 247,000 for the year 2005; however, according to 2002 statistics, the region

[256] Kolars and Mitchell, *The Euphrates River and Southeast Anatolia Development Project* (Southern Illinois University, 1991), 47.

[257] Turkish Statistical Institute, Press Release No. 228, "Annual Industry and Service Statistics, 2007."

[258] Turkish Statistical Institute, Press Release No. 157, "Structural Business Statistics, 2003-2004."

reached the figure of 88,107.[259] In 1985, the GAP provinces accounted for 1.85% of the industrial establishments and 1.92% of Turkey's total industrial labor force.[260] In 2002, these figures had increased to 5.8% and 4.36%, respectively, due not only to the development that took place, but also to the expansion of the GAP project, since 1995, to include three more projects to number nine total projects.[261]

On the other hand, despite the development in absolute numbers, the GAP region suffers an intraregional disparity, which may cause adverse socioeconomic development in the region. The provinces of Turkey have been divided into five developed regions according to their socioeconomic indicators for potential development and growth, and accordingly, have been ranked from the first (best) to fifth (worse) degree. With the intensive and dynamic industrialization in recent, years, Gaziantep has been referred to as a New Industrial District (NID) is included in the second degree of developed provinces. The most important characteristic of this group of provinces is the initiation of a rapid development process, primarily in the textiles industry, due to the advantage of ample and cheap labor, as a result of the promotion of exports based on the outward-oriented development strategy of the state. Diyarbakır and Adıyaman belong to the fourth degree of developed provinces. These provinces are generally located around the third degree developed provinces and have recently entered into a rapid development process based on manufacturing industry activities. It may be said that the fourth degree developed provinces group are on the threshold of development.[262] The rest of the provinces of the GAP region belong to the fifth degree of developed provinces, which reflects the lowest values for potential growth, as a result of mass migration, causing regression and economic stagnation.[263]

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[259] Turkish Statistical Institute.

[260] Kolars and Mitchell, *The Euphrates River and Southeast Anatolia Development Project* (Southern Illinois University, 1991), 49.

[261] Turkish Statistical Institute and the author's own calculations.

[262] Metin Ozaslan et al., "Regional Disparities and Territorial Indicators in Turkey: Socioeconomic Development Index (SEDI)," (2004), 15.

[263]Ozaslan et al., "Regional Disparities and Territorial Indicators in Turkey," 16.

The GAP region (Southeastern Anatolia) as an economic area is ranked sixth among the seven geographical regions of Turkey (Aegean, Mediterranean, Marmara, Black Sea, Central Anatolia, Southeastern Anatolia, and Eastern Anatolia). This is due to factors such as geographical structure, climate characteristics and relative distances to developed regional markets, which are the major elements of stagnation.[264] The GAP region is also sixth among seven in the industrial index, with the exception of the city of Gaziantep, which stands above the regional level compared to Turkey's other industrial cities as a unit.[265]

Gaziantep exports for the first six months of 2010 were $1.7 billion, while Siirt province marked a mere $127.6 million.[266] The total exports from the GAP region amounted to $2.27 billion for the same period.[267] The above figures obviously show that Gaziantep province bears 74.8% of the total exports of the region, while the other provinces share the rest.

Table 15. The share of the GAP Region in Turkey's total exports (2002–2010), %

Years	2002	2003	2004	2005	2006	2007*	2008	2009	2010
%	1.9	2.1	2.5	3,1	2.8	2.8	3.32	N/A	4.25
Excluding Gaziantep	0.20	0.26	0.44	0.82	0,68	0.69	0.87	N/A	1.07

Source: SIS, http://www.turkstat.gov.tr/Start.do and the author's own calculations.
*figures of the period 2002-2007: Ahenk Dereli, "Regional Development and Impacts of Regional Development Projects in the Light of 'New Economic Geography' and Firm Heterogeneity: The Case of Southeastern Anatolia Project (GAP)" (Thesis, 2008), 57 (Table 3.18).

In sum, the manufacturing industry in the GAP region has grown, but not uniformly. Gaziantep city stands out as the most developed, not only within the GAP region but also among the major industrial cities of the rest of Turkey. This may cause some adverse socioeconomic impact in the region in the future. In-migration from other

[264] Ozaslan et al., "Regional Disparities and Territorial Indicators in Turkey," 20.

[265] Ozaslan et al., "Regional Disparities and Territorial Indicators in Turkey," 23.

[266] World Bulletin News, "Regional Imbalances in Turkish Exports Grow."

[267] World Bulletin News, "Exports from S. Turkey Rises by over 53 Pct."

provinces to Gaziantep will weaken them economically and socially, thus undermining the prospects of the GAP project for achieving sustainability. If we look to the objective of achieving the projected number of employees in the industry, the project lags behind even the conservative scenario.

7. Health Sector

Environmental changes resulting from the construction and operation of large dams and their associated infrastructure developments, such as irrigation projects, have significant adverse effects on the health of the populations living in proximity. Numerous vector-borne diseases are associated with large reservoir developments. Moreover, socio-cultural disruptions may have traumatic effects on the affected populations.[268]

The two major vector-borne diseases related to irrigation and water resources development in Turkey are schistosomiasis and malaria. Schistosomiasis is a frequently occurring disease, but the implementation of large-scale projects may lead to epidemics. On the other hand, malaria has long been a significant health problem in Turkey and is still common in areas of irrigation and water resources development, as the disease exhibits a strong relationship with these developments.[269] The highest number of malaria cases has been observed in the area where the GAP project has been implemented. Three of the major city-regions, where increased incidents of the disease were noted, are situated in the GAP region: Diyarbakir, Batman, and Sanliurfa.[270]

The constructions of dams, transition to agriculture with the coming of spring, temperature, and an increase in humidity, which are all related to the GAP project, provide a convenient condition for the reproduction of the malaria parasite. In the city of Diyarbakir, the percentage of the infected population was 32.8% but it was brought down

[268] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), 118.

[269] Nilgun Harmanciogluet. al., "Irrigation, Health and Environment: A Review of Literature in Turkey," *International Water Management Institute* (2001), 11.

[270] Harmanciogluet. al., "Irrigation, Health and Environment," 19.

to 5.4% in 2000 after the implementation of the state's medical policies.[271] Malaria has not been eradicated in Southeastern Anatolia, and is considered a serious disease, as it causes death in 20% of cases, especially among very young populations, given that 48.37% of the population consists of children from 0–14.[272] The Turkish Ministry of Health implemented a project to combat malaria in the GAP region with outstanding results as the project brought a 44.4% decrease in total malaria cases.[273]

However, a new, never-before noticed parasite that affects the human intestinal system has now made its appearance in the GAP region. A new Community Health Project was completed by participating teams from Ege, Dicle, Gaziantep and Harran Universities under the Directorate of Turkish Parasitology Association and by the Southeastern Anatolia Project Regional Development Administration between 2001 and 2003. This was the first investigation of intestinal parasite prevalence in a large region such as the GAP region. Preliminary findings confirm the relationship of the new disease to the formation of dam ponds, enlargement of irrigation areas, change of product and methods of cultivation, urbanization and industrialization, all of which influence humans and the environment. In particular, results extracted from feces samples, taken from a total of 4,470 individuals, displayed the parasite in the feces of 41.8% of men, 44.3% of women and 32.2% of children, from 1–59 months old. This prevalence indicates how widespread parasitic diseases are in the region. The high prevalence of parasitic diseases in this area is one of the causes of malnutrition in 40% of children. Parasites were detected in 44.2% of feces samples taken from rural areas and in 39.5% taken from urban areas. When the distribution of parasites detected in feces samples was studied, the most common parasites were located in Gaziantep, Batman, Mardin, Diyarbakir, Sirnak and Sanliurfa, Siirt, Kilis and Adiyaman.[274]

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[271] A. Suay et al., "Malaria Status in Diyarbakir and its Districts Between 1995-2000 Years on Basis of the Malaria Eradication Institute's Data," *Biotechnol & Biotechnol. Eq* 19, no. 2 (2005), 165.

[272] Suay et al, "Malaria Status in Diyarbakir and its Districts Between 1995-2000 Years on Basis of the Malaria Eradication Institute's Data," 162.

[273] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration (RDA)* (June 2006), 14.

[274] M. Ak et. al., "The Distribution of the Intestinal Parasitic Diseases in the Southeast Anatolian (GAP-SAP) Region of Turkey," *Parasitol Res* 99, no. 2 (2006), abstract.

Beyond the medical health problems in the GAP region, there have been increased incidents of mental health problems as a consequence of internal migration. In the city of Diyarbakir, high suicide and attempted suicide rates among females are closely related to the increasing rate of internal migration. To a lesser degree, the negative social status of females living in the GAP region may contribute to suicide. In 2003, another study conducted in Batman found that the suicide rate among young women had unexpectedly increased in Batman in the 2000s. The suicide rate in Batman was found to be four times higher than that of Turkey as a whole. [275]

Since the health sector in the GAP region is significant from the point of view of newly emergent diseases and increased rates of suicide added to the existing malaria problem, the infrastructure and qualified personnel should be made adequate to meet the needs of the affected populations.

The number of health personnel (physicians, practitioners, dentists, nurses, sanitarians, and midwives) per 1,000 people can be considered a measure of accessibility to health services. Although there was substantial improvement in health services in the GAP region after the year 2000, it has not achieved the projected figures for the year 2005 and is still much lower than the country averages, as Table 16 indicates. The highest increase, roughly 39%, was in the number of practitioners, and the lowest increase, 5.5% on average, was in the number of dentists, midwives, and physicians. Moreover, the number of hospital beds increased substantially by roughly 36%, while the number of nurses increased by 6.4%. Importantly, the number of doctors fell by roughly 10%, but it seems the nation has followed a declining trend in the number of doctors.

[275] Gülen Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia: A Case Study for Turkey," *Turkish Studies* 5, no. 3 (2004), 11.

Table 16. Number of Health Personnel per 1000 people (1985, 2000–7)

Variable per 1000 persons	TURKEY			GAP			
	1985*	2000**	2006-7	1985*	2000**	2005[276]	2006-7
Doctors	0.718	-	*0.45*	0.275	-	1.26	*0.25*
Nurses	0.613	1.027	1.203	0.362	0.607	1.58	0.646
Hospital beds	2.06	2.57	2.62	1.18	1.174	2.46	1.6
Practicians		0.685	0.781		0.362		0.502
Midwives		0.612	0.596	0.267	0.367	0.949	0.365
Dentists		0.232	0.251		0.064		0.073
Physician		0.543	0.825		0.367		0.383

Source: TurkStat http://tuikapp.tuik.gov.tr/Bolgesel/sorguSayfa.do?target=degisken and the author's own calculations; *I.H. Olcay Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4, (1997), 456; **Sibel S. Toybiyik, "The Impact of the Southeastern Anatolia Project on the Inter-Regional Inequalities in Turkey" (Thesis, Middle East Technical University, 2008), 50 (Table 3.13)

In brief, since the health sector falls into the category of human sustainability, from the statistics above, two things become obvious: in absolute numbers the GAP region lags behind on average 47.4%[277] (2007) compared to the nation's numbers while, comparing the progress between the periods 1985–2000 and 2000–2007 within the GAP region, the increase in hospital beds and practitioners stands out as the most prominent progress, followed by a roughly 6% increase in other medical personnel and a decrease of 10% in the number of doctors.. In contrast, in terms of hospital beds and qualified personnel, the infrastructure has taken precedence over attracting qualified personnel, which has fallen short. The bottom line of the above statistics from Table 16 is that the projected figures of the year 2005 have not yet been reached.

[276] Unver, "Southeastern Anatolia Project (GAP)," 463 (Table 3).

[277] Author's own calculations based on the data in Table 16.

8. Education and Gender Issues in the GAP Region

Education is part of the program of the GAP project, to raise the literacy level of the population of the Southeastern Anatolia region, which in 1985 was 55%.[278] Specifically, the program aims at lifting up the overall status of the female population by means of developing productive skills, creating income-generating job opportunities, and rendering them active members within the broader context of society in the region. [279]

A study conducted for the GAP region in regard to the issue of the socioeconomic status of women in Southeastern Anatolia gives a gloomy impression of their actual developmental status. Among 2,203 small-scale local industrial firms in the GAP region, only 1% of the employers were women and most of them were illiterate.[280] Moreover, in only 8% of the firms did females occupy managerial and technical positions, 60% were unskilled and the remaining 32% were skilled workers.[281] In general, in urban areas of the GAP region, women are employed to carry out monotonous jobs in the handmade carpet and kilim (rug) weaving industries and are poorly paid due to international competition that drives the prices down.[282]

A UNDP report related to the Southeast Anatolia region and its socioeconomic status, gives a valuable evaluation of the region in terms of labor force, job opportunities and female status. In particular, women's participation in paid labor is an alarming 3.72%, compared to 19.9% in Turkey as a whole, which is already very low compared to EU and other middle-income countries.[283] The agricultural labor force is predominantly female. The region's economy is not growing fast enough to create employment opportunities for women or men. Lastly, the Southeastern Anatolia region suffers from a set of market integration challenges that further constrain opportunities for women's

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[278] Unver, "Southeastern Anatolia Project (GAP)," 456.

[279] Unver, "Southeastern Anatolia Project (GAP)," 481.

[280] Gülen Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia: A Case Study for Turkey," *Turkish Studies* 5, no. 3 (2004), 14.

[281] Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia," 16.

[282] Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia," 21.

[283] UNDP, "Innovations for Women's Empowerment in the GAP Region." (March 2008).

advancement. Among these is its association with negative events and developments, such as social tension. Moreover, national policies for women's employment are needed to overcome structural challenges such as socioeconomic barriers, lack of education, lack of business experience, and unequal access to finance and other means of production, all of which keep women out of paid employment opportunities, including self-owned enterprises.[284] For the above reasons, Turkey has received from the UNDP a funded project for the period 2008–2011 to enhance women's empowerment in the region.

The literacy ratio in the GAP region was as low as 55% in 1985 compared to the national rate of 7%, but it reached 68% in 2008.[285] Also, the percentage of the literate female ratio improved from 39% in 1985 to 60% in 2000.[286] As to figures of female literacy in 2000, other resources display lower numbers in provinces affected by the construction of dams in the GAP project. The population of the affected provinces—Diyarbakir, Adiyaman, Gaziantep, Mardin and Sanliurfa—was primarily Kurdish. A research project surveyed a total of 3,871 women living in 81 villages and representing 900 households in this region. The women's educational level was very low. Seventy-six point four percent of the women were illiterate. Of the remaining 23.6%, 6.3% could only read and write, 16.6% had finished primary school and only 1% had attended secondary schools.[287]

Part of the educational reformation of the GAP region is the related infrastructure. In 2000, there was one teacher per 40.55 children (primary school), and, in 2006, one teacher per 36 students. By 2009, the ratio had improved to one teacher per 28.56 children in the GAP region. The national figures, respectively, were 26.74, 25, and 22 children, respectively, for the same years.[288] It becomes obvious that the state puts heavy

[284] UNDP, "Innovations for Women's Empowerment in the GAP Region." (2008).

[285] UNDP, Activity Report (January–December, 2009), 4.

[286] Unver, "Southeastern Anatolia Project (GAP)," *Water Resources Development* 13, no. 4, (1997), 462. (Table 3) and Sibel S. Toybiyik, "The Impact of the Southeastern Anatolia Project on the Inter-Regional Inequalities in Turkey" (Thesis, Middle East Technical University, 2008), 43 (Table 3.7).

[287] Norwegian Refugee Council/Global IDP Project, "Profile of Internal Displacement: Turkey" (July 2003), 86.

[288] GAP-GIDEM, "Competitiveness Agenda for the GAP Region," *GAP Entrepreneur Support Centers Project (*October 2007), 20 (Table 2–1).

efforts into having more teachers in the GAP region. In elementary schools, where the national average is 45 children per classroom, there were 60 to 90 children per classroom in the eastern and southeastern provinces and as many as 80 to 100 per classroom in Diyarbakir. (Most schools in the southeast employed a shift schedule to accommodate the large numbers.)[289] Moreover, the greatest challenges to the education system in Southeast Anatolia are the lack of access to schools for rural children and the inability of poor families to send their children (particularly girls) to school. Seasonal migrants living in villages for only half a year may find it difficult to afford the costs of sending their children great distances to attend school, especially when they are not in one place for the duration of the school year.[290]

As to improving the status of women in the GAP region, since 1994 the state has established community centers (CATOMs) to further raise the literacy and productive skills of women, as well as to provide them with job opportunities and access to other social services. For this reason, seven CATOMs have been operational, engaging 2,000 women with seven more to have been established by 1997.[291] As of 2006, thirty such centers were active in all nine provinces of the GAP region reaching out to some 120,000, and as of 2005, five CATOMs had taken the character of associations to engage local youth in cultural and social activities in order to support youth in social development.[292] In 2005, a process propelled by the state to convert the CATOMs into associations had been initiated in five provinces (Batman, Mardin, Adiyaman, Sanliurfa and Kilis) to incorporate young people and children, not only females.[293]

In brief, the Turkish state has taken serious steps to improve the literacy of the populations in the GAP region. In primary schools, there is profound improvement in

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[289] Norwegian Refugee Council/Global IDP Project, "Profile of Internal Displacement: Turkey," 81.

[290] Julia Hill, "The GAP and Human Rights: Turkey's Successes and Conflicts with Sustainable Development in the Kurdish Region of Southeast Anatolia" (Thesis, International Studies of Oregon University, 2008), 56.

[291] Unver, "Southeastern Anatolia Project (GAP)," 481.

[292] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration (RDA)* (June 2006), 14–15.

[293] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project," 14.

regard to teacher-to-student ratios, but there is still much to be done in elementary schools, which seem to be the most popular among the populations. The education challenge will be the issue of accessibility to education for rural children, on the one hand, and an affordable cost of education for the populations in the future, on the other. The socioeconomic status of female populations in the GAP region is the primary aim of the educational program of the GAP project. Since 1994, thirty community centers (CATOMs) have been established not only to empower women in the region, but also to engage local youth in social development activities.

9. Analysis and Problems

I attempted to delineate the progress of the GAP project in the Southeastern Anatolia region of Turkey, according to its objectives, as they have been defined in the Master Plan and formulated within the context of sustainability.

According to its objectives, the project can be judged successful in controlling migration, but other trends make their appearance that put sustainability into question. The trend of out-migration from the GAP region to other regions within Turkey and, in particular, the reversing of the trend has been achieved substantially, but not completely.. The region still experiences out-migration, but to a reduced rate of roughly 7% compared with the rough estimate of 32% shown in Table 6. On the other hand, the rapid urbanization of the region is justified on the basis that rural populations migrate from rural to urban places, which may be interpreted as a weakening factor of rural areas vital for sustainable agricultural production. At this point, the GAP project contradicts what it intends to be doing: *"….increasing employment opportunities in rural areas.*"[294] Moreover, it fails to reverse the internal in-migration trade from rural to urban areas. In particular, "minimizing migration" is one of the objectives of the GAP project that refers to rural development.[295]

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[294] Carl E. Nestor, "Dimensions of Turkey's Kurdish Question and the Potential Impact of the Southeastern Anatolia Project (GAP)," *The International Journal of Kurdish Studies* 8, no. 1 (1995), 44.

[295] Republic of Turkey, "Turkey Water Report, 2009," 38.

The urbanization of the GAP region, measured against national figures, occurred at greater rates for the period 2000–2009: 5.37% for the GAP region and 4% for Turkey (Table 8). Additionally, the increase of population in the GAP region for 2000–9 does not follow the average increase of 3.56% that occurred during the period 1970–2000 under a fertility rate, with an average of 4.5% (Tables 9 and 10). Even though the present data cannot securely establish a binary linear relation between the population growth and the fertility rate, for the period 2000–2009 the fertility rate in the GAP region dropped to around 3% on the basis that the targeted fertility for the region by the year 2005 was 2.49% after the implementation of the GAP project.[296] Moreover, based on 1990 calculations, the projection of the population of the region for the year 2005 was 10 million and for the country 71.7 million. However, the GAP region lags behind by 2.54 million, while the country lags only by some tens of thousands behind the projections based on the 2009 population.[297] We can infer that since the out-migration was controlled after the year 2000, the region's growth rate should have met, if not surpassed, the above projected population figure, given the fertility number of 4.5%, which is not the case. The issue of fertility in the Southeastern Anatolia region is a side effect of the urbanization process, and it is desirable for the Turkish state from the perspective that births in a predominantly Kurdish region come under control and in alignment with national births.

In regard to the microeconomic indicators of GDP per capita, unemployment, and poverty, the GAP region provides a rather gloomy picture. In absolute numbers, the region's GDP has grown nine-fold. Compared to the nation's GDP per capita, however, it is declining as a percentage. Specifically, the region's GDP per capita rose from 47.18% (1988) to 55.26% (2001) for the period 1988–2001 (Table 12). This rise was cross-checked by two different sources, though for the period 2001–2009, there is a lack of statistics to securely establish that the growth still persists. However, for the year 2007–2008, the region's GDP per capita of 42.97% shows that it was much lower than that of the year 1988 (Table 12). This, in conjunction with the GAP-RDA (2006) referring to the same period of GDP per capita growth, may be interpreted as a declining trend began

[296] Unver, "Southeastern Anatolia Project (GAP)," 463 (Table 3).

[297] Unver, "Southeastern Anatolia Project (GAP)," 462 (Table 3).

after 2001 and continuing to the present time.. If this is true, then it must be said that Turkey, during the period 1988–2001 suffered two major economic crises (1994 and 2001), though the GAP region presented positive tendency for growth. On the other hand, during the period 2001–9, Turkey was faced with the 2007–2008 economic crisis, though growth in the GAP region was in decline. The point here is that in better economical times, the GAP region was on decline, which puts into question the issue of the economic sustainability of the GAP region. Even though the above argument cannot be totally convincing by itself, the indicators of unemployment and poverty in the GAP region may buttress it.

Since 1980, the GAP region has been experiencing an increasing rate of unemployment compared to national rates, which means that the project has not alleviated the trend. Only during the initial phase of the implementation of the GAP project (1995–2000) was unemployment at a standstill (Table 13), relative increase for the years 1995 to 2000), while during 2000–2005 it started a mild decline, which was exacerbated from 2005 to 2009 (see Table 13). Different sources on unemployment are consistent with an increasing pattern pinpointing the estimated figure of 21% on average. Among young people in the cities of Southeastern Turkey, unemployment often reaches 50–60%.[298]

Unemployment accompanies a rise in poverty in the GAP region. Taken together, they provide an explanation for the declining GDP per capita and, at the same, time put into ambiguity the sustainability of the region. The GAP project is supposed to raise the level of income and living standards of people in the region,[299] though it conspicuously failed to achieve this objective after the year 2005.

However, the state has launched job and profession consultancy services, as well as community work programs, to increase employment in the region covered by the South-Eastern Anatolia Project Regional Development Program, which has initiated the

[298] The Jamestown Foundation, "New York Times Touts Old Kurdish Investment Plan as a New Initiative," *Eurasia Daily Monitor* 5, no. 48 (2008).

[299] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration (RDA)* (June 2006), 1.

"GAP-2 Project" for the 2008–2012 period. Within the context of the project, 795 unemployed have benefited from these services using the financial resources of 312,926 TL as of 2008. On the other hand, as of October 2009, 11,951 unemployed attended the programs by taking advantage of the wider budget opportunities, 23,449,612 TL.[300] However, it is not known how many of those who attended the program found a job.

In the sector of infrastructure and industry, the GAP project demonstrates outstanding achievements. In particular, tremendous progress has been achieved so far in transportation/communication investments. In 2002, realization of these investments was 33.7%.[301] In 2006, 98% of the villages in the region were connected to the main road network, the Gaziantep-Sanliurfa motorway, including the Gaziantep ring road which was realized by 73%.[302] However, a new report states that 82.74% (186km out of 226km) was realized by the year 2009.[303] Economy Minister Ali Babacan asserted that the construction of an airport in Batman[304] province would be completed by 2010. The Şırnak airport, for which a tender of construction was recently launched increasing the number of airports in the GAP region from 7 to 8, will also play a massive role in sparking economic activities in the disadvantaged regions of the country.[305] The motorway connecting Mersin harbor to Sanliurfa, initially planned to be completed in 2007, was only tendered for the year 2010 due to feasibility.[306]

The manufacturing industry in the GAP region has demonstrated great developments, but a trend of intraregional economic disparity emerged (see Table 14). From the nine provinces of the GAP region, only four (Adiyaman, Diyarbakir, Sanliurfa, and Gaziantep) have dynamics for further improvement and productivity. Moreover, of

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[300] Investment Advisory Council for Turkey, Progress Report (2009), 26.

[301] Gülen Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia: A Case Study for Turkey," *Turkish Studies* 5, no. 3 (2004), 5 (Table 1).

[302] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," 5.

[303] Investment Advisory Council for Turkey, Progress Report (2009), 37.

[304] Batman Airport in the GAP-RDA 2006 report is stated to have been realized already

[305] Today's Zaman, "Economy meeting Convenes in Sanliurfa, Hails Democratic Initiative."

[306] Investment Advisory Council for Turkey, Progress Report (2009), 37.

the four provinces, only Gaziantep displays great dynamics for a full-fledged industrial city as it bears three-fourths of the share of the GAP region in Turkey's total exports (see Table 15). The establishment of irrigation networks in Sanliurfa province has increased the agricultural output and benefited the province the most. Nonetheless, increased agricultural output has not brought the desired socioeconomic development, and thus, benefiting larger population groups in the province.[307] Most of the agricultural output is either sold domestically or exported as raw materials.[308] Thus, the agro-based industry in the province of Sanliurfa is presently at the lower levels of the value chain, which impedes socioeconomic growth. Except for Gaziantep, all the provinces are characterized as being in the low-chain/low-paid industrial sector, using unskilled/low paid labor for manufacturing units for larger companies in Western Turkey. [309] The paradox of industrial development, which does not fall within the scope of the paper, is that the GAP project developed those provinces that already had a developmental advantage in regards to the rest in 1985 (Table 14).

In the same vein of infrastructure and industry development, the health and education sectors display a high realization with 85% of the investments (2002).[310] From Table 15 we infer that the state put heavy stress on the construction of hospitals rather than employing adequate numbers of personnel to staff them. The same trend continues to persist from the year 2008 up to now on the basis of new investments announced by the government for the period 2008–2012 (GAP 2008 Action Plan). In particular, two new hospitals are under construction in Diyarbakir and Mardin cities, one new hospital was completed in 2008 in Hakkari city, into which heavy investment has been poured since 2003 for construction of 90 schools and waterworks for the whole province.[311]

Nonetheless, the health status of the region, especially of the female population, seems to have been seriously affected because of the adverse impact to the surrounding

[307] UNDP, "Industrial Restructuring of Sanliurfa Project (Technical Assistance Component)," (2008)

[308] UNDP, "Industrial Restructuring of Sanliurfa Project (Technical Assistance Component)," (2008)

[309] UNDP, "Industrial Restructuring of Sanliurfa Project (Technical Assistance Component)," (2008)

[310] Elmas, "Women, Urbanization and Regional Development in Southeast Anatolia 5, no. 3 (2004), 5 (Table 1)

[311] Sunday's Zaman, "Changing face of Eastern Anatolia,"

environment due to dam construction in the GAP project. Diseases that already existed, such as schistomiasis and malaria, multiplied. The state controlled them, but has not yet eradicated them. Also, new diseases such as intestinal parasites have appeared. The state seems to be ignorant of the fact that they are side effects of the dams. The state was successful at bringing them under control, though it does not seem to behave pro-actively in dealing with diseases as actual effects of dam construction. Significantly, the issue of suicide rates in the GAP region demonstrates the difficulty of adapting to urban environments on the part of villagers who have to abandon their villages for the sake of dam construction.

The educational sector seems to be doing well, as it goes far beyond infrastructural achievements and has centered its attention on female empowerment in the region. However, the sector presents a problem relating to the issue of absorbing trained personnel into the region's job market. Specifically, the educational program of the GAP project attracts thousands of females as attendants of the established community centers (CATOMs), but the number of women actually finding a job is extremely low, which puts into question the effectiveness of the centers in providing women with the skills necessary to enable them to find a job. In 2005, from 120,000 women attending CATOMs activities, only 817 women found employment in the GAP region.[312] In 2009, 1,495 women were employed in a variety of jobs from atelier to restaurant chains to fashion textiles.[313]

D. CONCLUSIONS

The GAP project seems to have achieved positive results in some of its objectives through the period 1989–2009. Migration and infrastructure in education, health, industry and public services are the objectives that show general improvement to varying degrees; out-migration and infrastructure present the highest degrees of improvement after the year 2000. Attracting qualified personnel has showed the lowest improvement, primarily

[312] Republic of Turkey, "Latest Situation on Southeastern Anatolia Project: Activities of the GAP Administration," *Regional Development Administration (RDA)* (June 2006), 14.

[313] UNDP, "Innovations for Women's Empowerment in the GAP Region Project: Activity Report," *Swedish International development Cooperation Agency (SIDA)* (2009), 8–16.

in the health sector and, secondarily, in education. In the health sector particularly, in a few cases there have been negative results—for example, in the number of doctors and midwives during the period 2000–2007.

On the other hand, the employment objective has not been met and actually worsened after the year 2000. Unemployment in the GAP region has been at an all-time high, despite its stabilization during 1995–2000, a period that falls within the first operating years of the GAP project. It has not reversed since then. Even the period before the year 1989 had not shown numbers as high as 17.4%, with an estimated tendency for the year 2010 of around 21%. This issue is of critical significance, as it is linked with poverty and income (GDP per capita), which relate to the economic dimension of sustainability in the Southeastern Anatolia region.

The poverty rate worsened during 2006–2008 and the GDP per capita for 2007–2008 declined as a relative percentage of the nation's GDP per capita to a degree worse than before the year 1989. Taking together unemployment, poverty, and the GDP per capita, the GAP project does not seem to have improved the economic dimension of sustainability and the economic well-being of the people in the region.

The social dimension of sustainability, defined within the narrow context of the economic status of the region and the objectives of the project, follows the same course. Despite the control of out-migration, the project did not reverse in-migration from rural to urban areas. Abandoning rural areas and migrating to cities, the population is faced with problems of adaptation to the new city life-style and environment, which become obvious with the increased suicide rate among females migrating from their villages and the diseases caused by the construction of dams. Moreover, the rise in poverty and unemployment inhibit them from having access to affordable education. The community centers (CATOMs), which aim to empower the female and youth populations of the region, seem only to occupy the populations with activities, giving few skills, though they may provide a sort of cultural assimilation. Nonetheless, an unskilled population with the characteristics of poor education, a health status depending on migration and dam effects, and unskilled, is not a social well-being status.

The environmental dimension of sustainability, in factual terms, seems to lag behind its vision at the theoretical and administrative levels. It seems that certain dams in the GAP region were constructed without their EIASs, while environmental projects for the GAP region, with regard to mitigating the adverse transformation of nature by dam constructions are absent. The issue is problematic in the cognitive approach that the Turkish state takes towards the environment. It gives priority to higher standards of living that will trigger environmental sensitivity.

That said, the GAP project has demonstrated a tendency to improve numbers and physical achievements in terms of infrastructure within its objectives, but it has not achieved its overarching aim of sustainability.

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IV. THE GAP PROJECT AND TURKEY'S ACCESSION TO EU: PROSPECTS

A. INTRODUCTION

In order to conclude this assessment on the GAP project, this chapter will touch upon issues—at the international level—of specific gravity for the EU and its candidate members. First, even though the GAP project takes place in the Southeastern Anatolia region of Turkey, it has implications for the rest of the riparian states—Syria and Iraq share the rivers too—and Turkey, itself, in terms of regional stability, which is of primary concern for the EU goal of secure borders and stability. The second issue is the human rights of ethnic minorities and the way states address them in alignment with the Copenhagen political criteria of rule of law, protection, and respect for minorities. Since the Southeastern Anatolia region is predominantly inhabited by Kurdish populations, this chapter will examine the Turkish state's attitude towards the population in the region affected by the GAP project within this context. It must be noted that Turkey has met adverse criticism in regard to the issue of human rights from the EU, and that issue was an inhibitor to the process of Turkey's accession to EU.

Moreover, the chapter argues that on the issue of regional stability, the relations of the three riparian states are not at their best, especially between Turkey and Iraq. Turkey uses the dams of the GAP project as a tool to exert pressure on Iraq to achieve political goals in respect to the PKK insurgency, which operates from the northern part of Iraq.

In addressing the above two issues, the chapter will first examine the extent to which the GAP project contributes to stability in the region by focusing on tensions among the states as a result of dam construction and corollary environmental issues. Secondly, it will examine the living standards of Internally Displaced People (IDP) as result of the construction of dams in the GAP project and progress in mitigation measures adopted by the Turkish state within the context of human rights.

B. THE GAP PROJECT AND REGIONAL STABILITY

1. Initialization of the GAP: The First Crisis (1975)

There is extensive literature on water wars and conflicts as well as differences of opinions whether water-related issues have the potential to cause future wars. Even the Arab-Israeli war is being approached from a different angle by scholars as they attribute the war to reasons of territorial and water sovereignty, essentials for Israeli state survival. In the case of the Euphrates-Tigris basin, the GAP dams played important roles in the international relations of the states of the basin.

In the hydrological scenery of the basin, Turkey occupies an upstream position on both rivers—the Euphrates and the Tigris—with a major portion of the rivers springing up within Turkey. The Euphrates River flows southeast across the common border with Syria to enter Syrian land and continue its flow through Iraqi land until it ultimately reaches the Arabian Gulf. Though the Tigris does not cross Syrian land, it forms a hydro-physical common border between Turkey and Syria for 32 km, and then enters Iraq to later join the Euphrates and ultimately reach the Gulf.[314] Therefore, Turkey is upstream of Syria and Iraq, Syria as a middle-stream is upstream of Iraq and downstream of Turkey, and Iraq is downstream of both states. A bit more than 88% of the Euphrates' flow is contributed by Turkey; Syria contributes less than 12% to the flow, while Iraq contributes none.[315] Turkey and Iraq contribute roughly 50% each to the Tigris flow, while Syria contributes none.[316] From the above, it can be inferred that Syria depends heavily on the Euphrates, Turkey is rich in water resources, Iraq is totally dependent on both rivers, and all three states need the rivers for irrigation, electricity production and internal consumption for domestic and industrial use.

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[314] John F. Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Development Project* (Southern Illinois University Press, 1991), 1–6.

[315] G. E. Gruen, "Turkish Waters: Source of Regional Conflict or Catalyst for Peace?" *Water, Air, and Soil Pollution* 123 (2000), 566.

[316] Tonny Allan, *The Middle East Water Question: Hydropolitics and the Global Economy* (I.B.Tauris, 2002), 259.

Since the 1950s, both Turkey and Syria have embarked on ambitious projects based on irrigation and electricity generation, with Iraq following suit. The total amount of planned water utilization by the three riparian states exceeds the total flow capacity of the Euphrates by 49% of the available water.[317] The first conflict surrounding this problem occurred with the construction of the Keban and Karakaya dams in the 1960s and 1970s in Turkey.[318] It should be noted, that from the collapse of the Ottoman Empire in 1918 until the 1970s, there was little or no friction between the three states over water usage; instead, there was a degree of cooperation in terms of protecting the national interests of upstream and downstream states. The Keban and Karakaya dams were the first of the known GAP project dams to be built, and they had a huge capacity to impound substantial water volume from the Euphrates. This action, coupled with the fact that it was launched unilaterally by Turkey, alarmed the downstream states, Syria and Iraq. The alarming factor was the structural shift of hydropower away from them and towards Turkey; literally speaking, it was a shift in waterpower. That frustrated the downstream states and spurred among them competition and conflict later on, as Mark Reisner has said *"Water flows towards power and money."*[319] However, the medium for such shifts of power was provided by the dams. In response and countermeasures to the impounding of Euphrates water in the upper Euphrates, Syria started unilaterally with the construction of the Syrian Tabqa Dam (1968–1973). The accrued result of the Turkish and Syrian dams was a substantial decrease in the Euphrates' flow downstream to Iraq. The Iraqis requested more water be allowed to pass through the Tabqa Dam because the flow of the river had been reduced to one third of its natural volume. Despite the agreement, the Iraqis and the Syrians disputed the actual quantity reaching Iraqi soil, and a barrage of hostile statements was exchanged.[320] Then the situation escalated when the two countries

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[317] Ali Akanda et al., "The Tigris-Euphrates River Basin: Mediating a Path towards Regional Water Stability," *Al Nakhlah*, *Journal of Fletcher School* (Tufts University: Spring, 2007), 4.

[318] Frederick M. Lorenz and Edward J. Erickson, *The Euphrates Triangle: Security Implications of the Southeastern Anatolia Project*, Institute For National Strategic Studies (Washington DC., 1999), 7.

[319] Mustafa Dolatyar and Tim S. Gray, "The Politics of Water Scarcity in the Middle East," *Environmental Politics* 9, no. 3 (Autumn 2000), 78.

[320] Aaron T. Wolf, "A Hydropolitical History of the Nile, Jordan and Euphrates River Basins," in *International Waters of the Middle East,* edited by Asit Biswas (Oxford University Press, 1994), 29.

closed each others' airline offices and airspace, and sent troops to their common border, with the Iraqis threatening to bomb the dam.[321] The crisis was averted only after a mediation led by the Soviets and Saudis.[322]

Syrians were the most worried by the upstream damming of the Euphrates by the Turks, giving them control over the flow of water that was Syria's prime source of electric power and irrigation water.[323] The filling of both the Keban and Tabqa dams and, concomitantly, the extraction of water from the Euphrates coupled with the severe drought of 1970–75, brought Syria and Iraq to the verge of war.[324] Paradoxically, neither country condemned Turkey for the Keban Dam contribution to the decreasing flow. This may be interpreted as a well-organized attempt, by Turkey, to provide convincing data to the states to the opposite effect. Indeed, before the outbreak of the crisis, during the period 1962–1974, there were thirteen negotiating rounds between Iraq and Turkey confined simply to exchanging hydrologic data, none of which resulted in any agreement. Similarly, from 1962 to 1971, four such rounds took place between Turkey and Syria for the same purpose.[325] However, the crisis of 1974 broke out between Syria and Iraq with both having been convinced that the Keban filling did not play a significant role in the decrease of the flow.[326] Only after the construction of the fourth dam, Ataturk, which provoked the second crisis in the basin later on, this time between Turkey and Syria, would the impact of large dams on the upper Euphrates in Turkey be revealed within the context of the GAP water development project.

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[321] AQUASTAT, United Nations FAO Organization Databases.

[322] Daniel Hillel, *Rivers of Eden: The Struggle for Water and the Quest for Peace in the Middle East* (New York: Oxford University Press, 1994), 108.

[323] Hillel, *Rivers of Eden*, 109.

[324] Marwa Daoudy, "Asymmetric Power: negotiating Water in the Euphrates and Tigris," International *Negotiations* 14 (2009), 372.

[325] Daoudy, "Asymmetric Power: negotiating Water in the Euphrates and Tigris," 374 (Table 1).

[326] Greg Shapland, *Rivers of Discord: International Water Disputes in the Middle East* (St. Martin's Press, 1997), 117.

2. Amidst GAP Project: The Second Crisis (1990)

During 1980–1990, water interests intertwined with national security, resulting in two water protocols—one between Turkey and Syria and one between Syria and Iraq—in regard to the issue of minimum allocation of water. Again, the paradox of this period compared to the previous one was that despite the three countries having reached an agreement, the second crisis, precipitated by the filling of the Ataturk Dam in Turkey, was not averted.

Following the 1974 crisis, a cooperation framed by bilateral and trilateral committees was mainly characterized by concerns over the launch of the GAP project on the part of Syria and Iraq. The process of cooperation did not result in any agreement; instead, tensions started over again with the construction of Turkey's Karakaya Dam in 1984.[327] As none of the three states had reached an agreement on the flow of the Euphrates River after the first crisis, a special event was seized by Syria as a bargaining tool in water negotiations. Turkey's Southeastern Anatolia region had been the venue for clashes between a Kurdish separatist movement and the Turkish army. Syria played the "Kurdish card," according to Turkish allegations, by harboring and training the separatists to gain a compromise on the water issue. Indeed, Turkey agreed in the protocol of 1987 to guarantee a minimum annual flow of 500 cubic m/sec as a trade-off of ensuring Syrian collaboration on border security and abandoning support for the separatists.[328] This agreement boosted a further bilateral agreement in 1990 between Syria and Iraq to share the 500 cm/sec of water in the proportion 290 cubic m/sec for Syria and the rest for Iraq.[329]

However, the optimism over establishing a cooperative regime vanished into thin air when Turkey diverted water from the Euphrates to fill up the Ataturk Dam, a process that lasted a month. Syria and Turkey were once again on the brink of war.[330] Despite the

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[327] Daoudy, "Asymmetric Power: Negotiating Water in the Euphrates and Tigris," 385.

[328] A. Carkoglu and M. Eder, "Domestic Concerns and the Water Conflict Over the Euphrates-Tigris River Basin," *Middle Eastern Studies* 37, no. 1 (2001), 60.

[329] Helga Haftendorn, "Water and International Conflict," *Third World Quarterly* 21, no. 1 (2000), 57.

[330] Daoudy, "Asymmetric Power: Negotiating Water in the Euphrates and Tigris," 373.

fact that Turkey did this during winter when water consumption was lowest and broadcast an advisory, Syria and Iraq accused Turkey of creating a *de facto* situation by completing these dams. Iraq requested that Turkey reduce the amount of time needed to fill the Ataturk Reservoir Dam, but to no avail.[331] Once again, negotiations started but proved to be futile as Turkey started building the Birecik Dam in 1992 amidst efforts to persuade Syria not to support Kurdish separatists. The dispute between Turkey and Syria, intimately linked with the Kurdish issue for so many years, spiked again in October 1998 with a military showdown between the two countries. However, Syria's agreement to end its support for the separatists and its handing of Ocalan, the leader of the Kurdish separatist movement, over to Turkey, eased tensions from Syria's concern over reactions from the U.S., a strategic ally of Turkey.[332] Ocalan's delivery seemed to restore Syria-Turkey relations, as both states again concluded a protocol of security in which Syria explicitly pledged not to support the Kurdish separatist movement in any way. However, the benefit was to Turkey, as Syria lost its trump card and the credibility to disrupt the implementation of the GAP project.[333] The restoration of their relationship in 2004 was earmarked by the establishment of technical cooperation at the administrative level between the Turkish GAP and Syrian GOLD[334] project development administrations and by mutual visits paid by Turkish and Syrian leaders to discuss water issues relating to further use of the Tigris River.[335]

3. Environmental Concerns

Even if the relationship of environment and international conflict or cooperation has not yet been proved, it seems there is an underlying notion that local or regional

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[331] Jesus del Rio Luelmo, "Water and Regional Conflict: Turkey's Peace Pipeline," *European Urban and Regional Studies* 3, no. 1 (1996), 70.

[332] Carkoglu and Eder, "Domestic Concerns and the Water Conflict Over the Euphrates-Tigris River Basin," 61.

[333] G. E. Gruen, "Turkish Waters: Source of Regional Conflict or Catalyst for Peace?" *Water, Air, and Soil Pollution* 123 (2000), 577.

[334] The General Organization for Land Development (GOLD)

[335] Jeroen Warner, "Contested Hydrohegemony: Hydraulic Control and Security in Turkey," *Water Alternatives* 1, no. 2 (2008), 284.

instability arises from a combination of environmental and political factors and may escalate to the international level and become violent.[336] Major water development projects have adverse effects on downstream users and ecosystems, including changes in control of local resources and economic dislocations, all of which may lead to disputes on a local level or across borders.[337] The GAP project, as one such water development, has caused growing and so far, unresolved, tensions among the three riparian states.[338] The Euphrates-Tigris basin is coming under increasing population, irrigation, and energy pressures and their concomitant conflicts, especially over sources for extensive irrigation programs. All of these may become particularly severe on the basis of an urgent demand to meet food needs.[339]

Moreover, it has been hypothesized that in the future "environmental scarcities" of renewable resources will increase sharply. If they become severe, they could induce violent civil or international conflicts.[340] The term "environmental scarcity" encompasses three elements: climate change, population growth, and the unequal distribution of water resources.[341] Since river water flows from one area to another, one country's access can be affected by another's actions. Conflict is most probable when downstream riparians are highly dependent on river water. Downstream riparians often fear that their upstream neighbors will use water as a means of coercion. This situation is particularly dangerous if downstream countries believe they have the military power to remedy the situation.[342]

The GAP water development project fits into the "environmental scarcity and conflict scenario." By examining the three elements and the extent to which they play a role in the aforementioned crisis among the three states, it becomes obvious that both of

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[336] Peter H. Gleick, "Water and Conflict: Fresh Water Resources and International Security," *International Security* 18, no. 1 (Summer 1993), 81.

[337] Peter H. Gleick, "Water and Conflict," 93.

[338] Peter H. Gleick, "Water and Conflict," 95.

[339] Peter H. Gleick, "Water and Conflict," 92.

[340] Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from cases," in *New Global Dangers: Changing Dimensions of International Security*, ed. Michael Brown et al. (MIT Press, 2004), 265.

[341] Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict," 268.

[342] Thomas F. Homer-Dixon, "Environmental Scarcities and Violent Conflict," 279.

the crises of 1974 and 1990 occurred during extreme droughts; 1970–1975 and 1990–1993 satisfy the criterion of climate change. Moreover, the unequal distribution criterion was met, as Turkey is the richest and Syria the poorest in regard to the two rivers. Only the third criterion of population growth needs a projection to the future. Indeed, projections for the year 2050 predict an increase in the population of the Euphrates-Tigris basin of 100%, with 53.4% coming from Turkey alone.[343] The population growth scenario counts only for the future and not the current conflict. Therefore, the scenario for the future becomes scarier, as the present conflict was based only on the first two elements.

Additionally, it can be said that the GAP project, viewed only as a physical structure, a network of dams, contributes to environmental scarcity. In particular, the accrued surface water of the reservoirs of the GAP increases water evaporation, which means losses in actual water.[344] If we take into account both the volume of the water impounded behind the reservoirs and the evaporation, a basin rich in water is transformed into a basin of scarce water.

There are also secondary issues that have not emerged as potential indicators for conflict, but it is argued that environmental degradation will take first place in the political agenda of the governments as such issues cannot be solved without cooperation. Degraded water quality and salts contribute to reduced agricultural production, which constitutes one of many factors contributing to "environmental scarcity." The case of the Balikh and Khabour rivers is very interesting in this regard. Due to extensive irrigation within Turkey, these rivers will experience an increase in their flow, caused by augmentation of drainage water, to the benefit of Syria. However, the crucial problem is the quantity of salt that these waters will carry. Currently their salinity value of 700ppm is roughly at the critical limit of moderate quality. If the salinity value increases, it will have an adverse economic impact on Syria as the land cultivated in the rivers will experience low crop yields, which will eventually lead to the abandonment of

[343] Adam Davidson-Harden et al., "The Geopolitics of the Water Justice Movement," *Peace Conflict & Development*, no. 11 (November 2007), 12.

[344] Hussein Amery and Aaron Wolf, *Water in the Middle East: A Geography of Peace* (University of Texas Press, 2000), 56.

cultivation.[345] As more and more irrigation projects come on line in Turkey, the pollution of the Balikh and Khabir rivers, which are tributaries to the Euphrates, will increase; in conjunction with the reduced flow of the Euphrates River, this will lead to greater concentrations of dissolved solids downstream.[346]

There is considerable evidence that Iraq has already experienced a rise in the salinity of the water it gets from Turkey, directly or through Syria, so much so that in the city of Basra, much of the irrigated land is lost due to excessive salinity. Both Syria and Iraq are adamant about protecting not only their quantitative, but also their qualitative shares. This issue will affect both the shape of the future Iraqi entity that will emerge after the U.S. leaves Iraq, and Turkey's entry into the European Union.[347]

Given the current environmental issues, the future emerges uncertain in regard to the final impact the completion and full operation of all the projects and dams the GAP project will have on the flow of the Euphrates River. Since 1991, scholars have predicted that the full implementation of the GAP project will put an increasingly dramatic strain upon the Euphrates and Tigris rivers.[348]

Indeed, a study using the Water Evaluation Planning System (WEAP) model to simulate the possible water demand scenarios on the Euphrates is quite discouraging. The model simulated the operation of six dams—three of the GAP project, two Syrians, and one Iraq—-and compared the water demand of the model to that of a full development scenario of the GAP project. The results showed that the monthly water demand in the full GAP development scenario is significantly higher than the model's and, in addition,

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[345] Peter Beaumont, "Agricultural and Environmental Changes in the Upper Euphrates Catchment of Turkey and Syria and their Political and Economic Implications," *Applied Geography* 16, no. 2 (1996), 155.

[346] John Kolars, "Problems of International River Management: The Case of the Euphrates," in *International Waters of the Middle East: From Euphrates-Tigris to Nile,* ed. Asit Biswas, Water Resources Management Series 2 (Oxford University Press, 1994), 77.

[347] Atif Kubursi, "Water Scarcity and Water Wars in the Middle East?" in *Water: Global Common and Global Problems,* ed. Velma I. Grover (Science Publishers, 2006), 432.

[348] John F. Kolars and William A. Mitchell, *The Euphrates River and the Southeast Anatolia Development Project* (Southern Illinois University Press, 1991), 285.

there will be an unmet future demand of 50% of the current usage.[349] The model estimates water scarcity without counting the Tigris River, but it is unknown whether Tigris waters will be diverted into the Euphrates in the future to make up any lag in water demand among the riparian states, since the Tigris River is of paramount importance to the Iraqi state, as will be shown later on.

Another study conducted on both rivers corroborates the above estimates and is even more specific about the hydrological risks that both Syria and Iraq may be facing in the future should the GAP project become fully operational. Specifically, the study demonstrated that under full completion of the GAP, the Euphrates flow will be reduced further, to 32% from the current 17%, and Tigris flow to 25% from the current 20%. Significantly, these further reductions negatively affect Turkey's commitment to its neighbors to provide the agreed amount of water of 500 cubic m/sec, as the amount can only be provided 75% of the time in the Euphrates River.[350]

4. Post-2000 Relations Between Turkey, Syria, and Iraq: The GAP Determines Cooperation Under the Threat of Coercion

Despite the fact that Turkey supported claims about the benefits of the GAP project to regulate the extremely high variance of both rivers' water flow and diminishing the effect of siltation downstream due to dams upstream, Syria and Iraq raised serious concerns about the project, as it affected their national aspirations.[351] In particular, Syria complained about the dwindling resources both of the Euphrates inflow and Syria's groundwater, which curtail its agricultural development and cause severe food shortages.[352] Moreover, the risk of not meeting its electricity needs from the electricity production of the Tabqa Dam will rise from the current risk of 16% to a high of 60% in

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[349] Ali Akanda et al., "The Tigris-Euphrates River Basin: Mediating a Path Towards regional Water Stability," *Al Nakhlah*, *Journal of Fletcher School* (Tufts University: Spring, 2007), 8.

[350] A. Tilmant and J. Lettany, "Hydrological Risk Assessment in the Euphrates-Tigris River Basin: A Stochastic Dual Dynamic Programming Approach," *Water International* 32, no. 2 (2007), 306–308.

[351] Ozden Bilen, "Prospects for Technical Cooperation in the Euphrates-Tigris Basin," in *International Waters of the Middle East,* edited by Asit Biswas (Oxford University Press, 1994), 96–99.

[352] Daniel Hillel, *Rivers of Eden: The Struggle for Water and the Quest for Peace in the Middle East* (New York: Oxford University Press, 1994), 37.

the future.[353] Even more sensitive has been the situation in Iraq, which has a larger population than Syria and lies further downstream. The northwestern part of Iraq, as a wheat and rice producing area, has been vulnerable to reduced flows, so the only solution for Iraq is to make use of the Tigris, but the huge hydroelectric Ilisu Dam, soon to be completed, will cause a reduction in the river's flow.[354]

However, it seems that Turkey has changed its behavior by adopting a more cooperative approach towards issues related to water, a fact that has become conspicuous in the country's bilateral relations with Syria. Despite the fact that the restoration of a Turkey-Syria relationship was highlighted by the delivery of the Kurdish leader Ocalan in 1999, it took quite a long time for Turkey to take the initiative. Implicitly, Turkey may have become conscious of the real problems that the GAP project has caused and may want to remedy past faults. This is not the real reason, as doing so would legitimize the negative effects of the GAP, something that Turkey has never admitted, so far. On the contrary, it has to do with Syria's posture against the Syrian Kurdish population in conjunction with the security implications for Turkey in the Kurdish Northern part of Iraq. If these two issues are taken together, they can explain the discriminatory attitude of Turkey—for Syria and against Iraq—and the role of the GAP project in the second case.

In brief, Syria had commenced a project similar to the GAP, the Euphrates Basin Development Project (EBDP), in the northern part of Syria just adjacent to the common southeastern border between Turkey and Syria. The initialization of the project was marked by the construction of the Tabqa Dam in 1974, which was ranked tenth in the world largest dams at that time. Its aim was to bring economic prosperity to the mixed Kurdish in majority and some Arab and Armenians, as well as to the whole country, and was achieved by the mid 1990s.[355] From 2002 through 2005, the Syrian state adopted a discriminatory attitude toward the Kurdish population in the area of the EBDP project on

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[353] Quentin Goor et al., "Impacts of Southeastern Anatolia Project on the Performance of the Tabqa Dam and Hydropower Plant in Syria," *Changes in Water Resources Systems; Methodologies to Maintain Water Security and Ensure Integrated Management Journal* (July 2007), 97.

[354] Hillel, *Rivers of Eden*, 37.

[355] Alessandra Galie and Kerim Yildiz, *Development in Syria: A Gender and Minority Perspective* (Kurdish Human Rights Project: July 2005), 68–70.

issues of land, access to resources, and loans. It even precluded them from starting any economic enterprises.[356] In parallel, in 2001, the two neighbors agreed to cooperate on the GAP project, but under the terms determined by the then Turkish Deputy Prime Minister, Mesut Yilmaz:

> We do not want to be in conflict with Syria and we do appreciate the role played by Damascus in expelling members of the Kurdistan Workers Party, but the Euphrates reservoir is very important for the future of economic development in Turkey […] We have completed work on almost 50% of the infrastructure and we are in the meantime working in the final stages and we will extend the invitation to Syria to accept the inevitability of this project and to join negotiations on a rational use of waters. We are ready to deal fairly and generously, but the division of waters will not be equal as the Euphrates, like any other Turkish river, should be basically used for serving the interests of the Turkish people.

In 2002, Turkey and Syria signed a Memorandum of Understanding that established joint research over irrigation and agricultural plans. The shared characteristic of both the GAP and EBDP projects is that the Kurds, on either side of the Turkey-Syria border, have never been informed or consulted about proposed development plans for the Euphrates.[357]

That said, the year 2007 officially marked a shift in Turkish water policy in the basin to a fair-sharing model promising to solve the problems it had with Syria and Iraq. This shift was heralded by the words of Environment and Forestry Minister Veysel Eroglu, who said, *"No war over water resources will emerge in the region."* In March 2007, Turkey solved its problems with Syria by undertaking, in common, joint projects for the construction of dams in the basin and a provision for Syria with substantial scientific support on irrigation techniques. Furthermore, a joint scientific committee was assembled and discovered that evaporation in Syria is at high levels and that Syria does not have suitable terrain for storing water; therefore, it would be more reasonable to store water in Turkish territories. Accordingly, Syria was convinced that Turkey's construction of more dams would, in the long term, be beneficial to Syria, a fact that compelled Syria

[356] Galie and Yildiz, *Development in Syria*, 75.

[357] Galie and Yildiz, *Development in Syria*, 77.

to stop objecting to the Ilısu Dam.[358] The first project both countries agreed on, in principle, to develop was the Asi Friendship Dam, to be built on the Orontes River on the border between Syria and Turkey. The Orontes River originates in Syria and flows through Turkey. A Turkish team of technical experts went to Syria to start working on mapping and feasibility studies.[359] Eroglu has gone beyond emphasizing only this project by stating that the GAP project could be expanded to include Syria, offering optimism that both states would have even closer cooperation.[360]

On the other hand, Turkey-Iraq relations are not being played out as smoothly as the Turkey-Syria rapprochement. Iraq experienced a grave situation in 2009, when a rapidly falling flow in the Euphrates River for three weeks caused a fall in electricity production in the south of Iraq by 50%, leaving up to 2 million people without electricity. In Basra, a suburb north of the city was evacuated by its 3,000 people, as they could no longer drink the extremely saline water. Iraq's water minister, Dr. Abdul Latif Rashid, estimated that up to 300,000 marshland residents in south Iraq were on the move, many of them newly uprooted and heading for nearby towns and cities that could do little to support them. He said that in the last 20–30 years, neighboring countries had built a number of structures for collecting water or diverting water for their agricultural lands, while the amount used for Iraqi agriculture's purposes had fallen by 50%.[361] This dire situation contradicts a water forum held in March 2009, in Turkey, under the theme "Bridging Divides for Water," where Turkey was purported to have established a level of mutual confidence with both Baghdad and Damascus and set the conditions for a Peace Water Project.[362]

Iraq is a very special case for Turkey to deal with. They share a common feature, the Kurdish populations inhabiting both countries—Southeastern Anatolia in Turkey and the northern part of Iraq—that form a common border between Turkey and Iraq. Military

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[358] The Journal of Turkish Weekly, "Turkey puts an end to water wars thesis in the Middle East."

[359] Today's Zaman, "Turkey, Syria cooperate on water front."

[360] Today's Zaman, "Turkey's growing ties with neighbors increase cooperation on water."

[361] Martin Chulov, "Water shortage threatens two million people in southern Iraq."

[362] Today's Zaman, "World Water Forum and need for 'pax water' around Turkey."

clashes between the Kurdish separatist movement and the Turkish army are still ongoing, with the separatists launching their attacks mainly from northern Iraq. Turkey has always feared the scenario of the Kurds succeeding in creating an independent Kurdish state in Iraq, which might have a spillover effect on the Southeastern Anatolia region in Turkey.[363] Within the context of American troop withdrawals and analysts' estimation that Iraqi Kurdistan is effectively a separate state—with little violence and an effective administration—that has rapidly developed over the last few years,[364] Turkey uses water power as a coercive political tool towards Iraq. It came as no surprise when during the bilateral talks that took place in Baghdad in August 2009 between Turkey and Iraq, Turkish Foreign Minister Ahmet Davutoglu promised that Turkey would increase the amount of the Euphrates water flowing into Iraq and would help with technology to increase the amount of Iraq's usable water. In exchange, Iraq would commit to clamping down on attacks by Kurdish rebels from Iraq into Turkey.[365] This is the second time that Turkey has asked for suppression of the PKK. The first time Turkey asked for it from the Prime Minister of Kurdish Northern Iraq, Barzani, but it is difficult to expect Barzani to order Kurds to fight against Kurds.[366]

5. Conclusions

It is obvious that the regime in the basin has changed from conflict to cooperation, though there are subtle nuances undermining the cooperative regime, which render it unstable and susceptible to conflict. In particular, if the basin is viewed from the perspective of physical constructions—dam construction—the likelihood of conflict increases and reaches the level of military mobilization. A basin without treaties and low dam density is being characterized as a conflict-prone basin,[367] which is best described

[363] Abdullah Akyuz and Steven A. Cook, "Are US-Turkish Relations likely to Improve?" *Global Researcher* 1, no. 12 (December 2007), 317.

[364] Boffy's Blog, "Class War Erupts in Iraq."

[365] *The Christian Science Monitor,* "Turkey offers water for Iraqi crackdown on Kurdish rebels."

[366] Emrullah Uslu, "Turkey's Kurdish Problem: Steps Toward a Solution," *Studies in Conflict & Terrorism* 30, no. 2 (2004) 165.

[367] Aaron Wolf et al., "International Waters: Identifying Basins at Risk," *Water Policy* 5 (2003), 45.

by the two prior crises of 1974 and 1990. Though the second crisis was precipitated because Turkey did not meet the criterion of the agreement, after the protocols signed by Turkey, Syria and Iraq, the basin was transformed to one with treaties. Thus, it is ranked as a cooperative basin. However, the basin is still at risk because, according to Wolf, treaties must be signed between pairs of states.[368] Therefore, the basin includes two treaties—one between Turkey and Syria, and one between Syria and Iraq—but there is no treaty between Turkey and Iraq. Moreover, these treaties apply to the Euphrates River and not to the Tigris River; on the other hand, dam constructions on the river are ongoing with the most controversial being the Ilisu Dam. This dam makes this part of the basin a place with high dam density without treaties, which is ranked much higher on the conflict scale.[369] In analogy to the military mobilization that occurred in the two crises, it should have re-occurred between Turkey and Iraq, but Iraq is the weakest state of the three. Moreover, Turkey discriminates, cooperating with Syria while it exerts political pressure on Iraq by using the GAP to offer more water in a quid pro quo with Iraq and clamping down on the PKK in its northern part. Because considered coercion exacerbates the situation on the Tigris side of the basin, it remains to be seen whether Iraq will in turn use the Kurdish card against Turkey, as Syria did. If this scenario occurs, then we will see a repetition of what happened between Turkey and Syria in the past years.

A second flashpoint is the environmental issue that, irrespective of dam constructions, burdens the basin with environmental conflict. On that issue, there have been no treaties or measures taken by any country in the basin to remedy the situation.

In terms of international relations, it seems that from the status of raw anarchy, where all three actors had to fend for themselves, the basin passed to a mature anarchy with some common regimes. However, it still lags far behind a secure community status where violence is an unthinkable way of resolving conflicts between states.[370]

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[368] Wolf et al., "International Waters: Identifying Basins at Risk," 45 (Table 3).

[369] Wolf et al., "International Waters: Identifying Basins at Risk," 45.

[370] Jeroen Warner, "Mending the GAP-hydro-Hegemonic Stability in the Euphrates-Tigris Basin," in *Water, Development and Cooperation-Comparative Perspective: Euphrates-Tigris and Southern Africa*, Bonn International Center for Conversion (BICC), ed. Lars Wirkus (2005), 188.

C. THE GAP REGION AND THE COPENHAGEN CRITERIA: THE CASE OF INTERNALLY DISPLACED PEOPLE (IDP)

The European Union (EU) pays particular attention to meeting the political criteria on the part of its member or would-be member states. These criteria are connected to member-states' domestic politics adopted in line with EU policies to better harmonize and integrate themselves into the Union. Turkey, as an applicant state for full membership, has made significant progress toward meeting political criteria established by the EU for applicant states.[371]This came as an official announcement from the European Commission of the EU in October 2004 and in December 2004; the EU decided that Turkey had the qualifications as an applicant to proceed to the next stage, which will be formal negotiations for full membership.[372]

However, since then, Turkey's candidacy has been facing closer scrutiny with regard to Kurdish Southeastern Anatolia, within the context of meeting the Copenhagen political criteria.[373] According to these criteria, a membership requires that "the candidate country has achieved stability in institutions guaranteeing democracy, the rule of law, human rights and respect for and protection of minorities."[374] The evaluation of the European Commission over the Southeastern Anatolia asserts:

> Overall the situation in the East and Southeast of the country, where people of Kurdish origin mostly live, has continued to improve gradually since 1999, both in terms of security and the enjoyment of fundamental freedoms. The emergency rule has been lifted and the return of the internally displaced persons (IDPs) has continued. Nevertheless, the situation of IDPs remains critical."[375]

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[371] Carl Dahlman, "Turkey's Accession to the European Union: The Geopolitics of Enlargement," *Eurasian Geography and Economics* (2004), 553.

[372] Jonathan Sugden, "Still Critical: Prospects in 2005 for Internally Displaced Kurds in Turkey," *Human Rights Watch Report for UNCHR (*March 7, 2005).

[373] Carl Dahlman, "Turkey's Accession to the European Union: The Geopolitics of Enlargement," *Eurasian Geography and Economics* (2004), 554.

[374] Fotios Moustakis and Rudra Chaudhuri, "Turkish-Kurdish Relations and the European Union: An Unprecedented Shift in the Kemalist Paradigm?" *Mediterranean Quarterly* 16, no. 4 (Autumn 2005), 85.

[375] European Commission, *2004 Regular Report on Turkey's Progress towards Accession* (Brussels, 2004), 50

The above statement includes two contradictory issues that affect its final impression. The overall impression that the above statement leaves is that Turkey is performing well in meeting the political criteria in the aforementioned region, but the IDPs status remains critical. This latter issue nullifies the overall positive impression on the basis that, firstly, the return of IDPs is not being carried out sufficiently and; secondly, the overall status of the IDPs is critical. The EU hits "two birds with one stone" in its statement. At this point, it is essential to clarify that there are two categories of IDPs: those who abandoned their homes because of the armed conflict between the Turkish army and the guerrilla insurgency of the PKK that ended in 2002, and those evicted from their places due to the construction of the GAP project dams. This chapter will focus on those IDPs that resulted from the GAP project.

That said, the issue of IDPs in the GAP region still lags behind and will undermine the position of Turkey in the year 2014,[376] set to be the earliest date for initiation of formal negotiations for full membership. I will examine the status of the IDPs within the frame of the Copenhagen political criteria. I will make a comparative analysis between the cases of resettlement practices and compensation during the constructions of the Keban, Birecik, and Ataturk dams and the Ilisu Dam. The three former dams were completed before 1999, while the latter's construction work started in 2008.

1. Definition of Internally Displaced People: General Principles

The definition of internally displace people, as well as some principles concerning them, according to the Commission on Security and Cooperation in Europe, is provided below:

> Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters…

[376] Dahlman, "Turkey's Accession to the European Union," 553.

> Internally displaced persons shall enjoy, in full equality, the same rights and freedoms under international and domestic law as do other persons in their country. (Principle 1) [377]
>
> Every human being shall have the right to be protected against being arbitrarily displaced from his or her home or place of habitual residence, when this displacement is ought to large-scale development projects, which are not justified by compelling and overriding public interests." (Principle 6.1.2(c))[378]
>
> Every internally displaced person has the right to liberty of movement and freedom to choose his or her residence. (Principle 14.1)[379]
>
> Internally displaced persons have the right to be protected against forcible return to or resettlement in any place where their life, safety, liberty and/or health would be at risk. (Principle 15(d))[380]

2. Mega-Projects and Internally Displaced People: The GAP Project

Mega-projects are those that bring rapid transformation to landscapes in a profound and very visible way, and which require intensive capital and state power.[381] They can be divided into four categories:

a. Infrastructure (e.g., ports, railroads, urban water and sewer systems)
b. Extraction (e.g., minerals, oil, and gas)
c. Production (e.g., industrial tree plantations, export processing zones, and manufacturing parks)
d. Consumption (e.g., massive tourist installations, theme parks, and real estate developments)

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[377] Commission on Security and Cooperation in Europe (CSCE), *Internally Displaced Persons in the Caucasus Region and the Southeastern Anatolia* (Washington DC, 2003), 48.

[378] CSCE, *Internally Displaced Persons*, 49–50.

[379] CSCE, *Internally Displaced Persons,* 52.

[380] CSCE, *Internally Displaced Persons,* 53.

[381] Paul K. Gellert and Barbara Lynch, "Mega-projects as Displacements" (UNESCO, 2003), 15.

Mega-projects may involve multiple activities of all four categories, including hydroelectric plants to provide energy for supporting the activities.[382] The GAP project, as an integral regional development, covers nine provinces in the Southeastern Anatolia region of Turkey in the fields of urban and rural infrastructure, agriculture, transportation, industry, education, health, housing, tourism, powerplants and irrigation schemes.[383]As such, it is a mega-project primarily based on dam constructions and hydroplant installations to support the activities.

Before proceeding to the effects of the GAP project in Southeastern Anatolia in terms of population displacement and mitigating measures by the state, some dimensions of displacement at the social level must be pointed out. Planned eviction and resettlement, and loss of resource base in the project area due to construction and/or flooding are some of the main primary (direct impact) dimensions, followed by secondary (indirect impact) dimensions, such as loss of access to resources and property, unemployment, and psychosocial stresses, to name a few.[384]

The construction of the dams in the GAP project requires land expropriation, and the evacuation of villages, and at the same time, calls for a resettlement process and compensation for the evicted. Since constructions of the first dam—Keban—was concluded in Southeastern Anatolia in 1974, the number of IDPs has reached 197,732, according to the Directorate of State Hydraulic Works (DSI) in 1999. Other sources do not validate official Turkish sources with regard to the number of displaced. The same lack of validations has been noticed in determining the exact size of the IDPs due to the armed conflicts between the Turkish army and the PKK in Southeastern Anatolia. In Chapter II, the large variation in the numbers supplied by the Turkish state and the NGOs (IHD, UNHCR, and KHRP) were revealed. The KHRP, a pro-Kurdish NGO, gives the upper limit, the Turkish state gives the lower, and the rest of the NGOs roughly validate the KHRP. The United Nations (UN) takes a middle position on displaced persons determining the number to be around 1 million, while the Commission on Security and

382. Gellert and Lynch, "Mega-projects as Displacements," 16.

383 Republic of Turkey, "Turkey Water Report 2009," *Directorate of Hydraulic State Works (DSI),* 36.

384 Gellert and Lynch, "Mega-projects as Displacements," 16 (Table 1).

Cooperation in Europe (CSCE) poises itself neutrally and legitimates both the numbers given by the Turkish state and the UN: 400,000 to 1 million.[385]

Moving back to the number of persons displaced by the GAP projects, for the Ataturk Dam, the state claims 55,300[386] were displaced. The EACH-FOR estimates that 113,476 people were displaced.[387] Based on a related report from a fact-finding mission in Southeastern Anatolia, The Corner House in the UK claims that the displaced range from between 150,000 to 200,000 people.[388] Individual resources report that around 350,000 (2004) people have been displaced by the GAP project, in total.[389] The reason for the variation in the IDPs exact size is due to the fact that most displacement statistics refer to the reservoir oustees only, a figure that is often far surpassed as other complementary parts of dam projects take place along with long-term ecological effects.[390] Putting together the above information, the IDPs produced by the GAP project range from between 255,000 to 350,000 people. This discourse on the size of IDPs, as a result of the armed conflict and the GAP project, aims at highlighting the fact that the IDPs' size, due to the GAP project is a serious fraction of the IDPs' size due to the armed conflict. This is of great significance, as the EU's statement on the overall situation of the IDPs of Turkey does not discriminate among the IDPs, but weighs them equally—whether they are displaced by dams or armed conflict—which is the right thing to do,, speaking in terms of human rights. Another point emerging from the above is that the GAP project undoubtedly has increased the total number of IDPs.[391]

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[385] CSCE, *Internally Displaced Persons*, 2.

[386] Swiss Federal Institute of Technology (ETH), "Sustainable Management of International Rivers; Case Study: Southeastern Anatolia Project in Turkey, GAP," *Center for International Studies* (Zurich, 2001), 10 (Table 1).

[387] EACH-FOR (Environmental Change and Forced Migration Scenarios), Specific Targeted Project-Scientific Support to Policies – SSP D.3.4 Synthesis Report (2009), 20.

[388] The Corner House, "The Ilisu dam, the World Commission on Dams and Export Credit Reform: The Final Report of a Fact-Finding Mission to the Illsu Dam Region" (October 2000).

[389] Behrooz Morvaridi, "Resettlement, Rights to Development and the Ilisu Dam, Turkey," *Development and Change* 35, no. 4 (2004), 729.

[390] Patrick McCully, *Silenced Rivers: The Ecology and Politics of Large Dams* (Zed Books, 2001), 67.

[391] Mark Muller and Sharon Linzey, *The Internally Displaced Kurds of Turkey: Ongoing Issues of Responsibility, Redress and Resettlement* (KHRP, 2007), 98.

Having established the importance of that category of IDPs, the chapter will proceed to examine resettlement practices and compensations by comparing the cases of the Keban, Birecik, and Ataturk dams; and the case of the Ilisu Dam.

a. The Keban Dam Case (Year of Completion: 1974)

This dam was finished in 1974 with an initial estimation of 18,000 IDPs, but it ultimately reached 40,000, dissolving some 174 villages in the area surrounding the dam.[392]The dam's development plan precluded any comprehensive resettlement for the population of the affected villages on the basis that the priorities of industrialization and urbanization collided economically with the issue of reintegration of the displaced into new settlements. Generally, resettlement means to be given a sufficient house to retain the social, economic and cultural life of the family and an appropriate plan for the economic survival of the family members.[393] The general policy was to provide resettlement for as few as possible and compensation for the land expropriated. Large landowners and small holders were compensated, but not the landless peasants who were a relatively small group. [394] A large amount of money was lost to lawyers, middlemen and estimators, as they were involved in the expropriation process, and to large landowners. The small holders and sharecroppers received a small amount of money, which they either spent on consumption goods or real estate, but lacking the qualifications to deal with the urban job market, lost their money. These people, along with the landless, formed the biggest part of the IDPs congesting the urban areas as unskilled, unemployed and poor. This triggered an increase in demand for urban housing already in short supply to accommodate the newcomers, thus further contributing to the poor living conditions.[395]

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[392] Swiss Federal Institute of Technology (ETH), "Sustainable Management of International Rivers; Case Study: Southeastern Anatolia Project in Turkey, GAP," *Center for International Studies* (Zurich, 2001), 10 (Table 1).

[393] Gokce Akyurek, "Impact of Ataturk Dam on Social and Environmental Aspects of the Southeastern Anatolia Project," (Thesis, Middle East Technical University of Natural and Applied Sciences, 2005), 46.

[394] Kerem Oktem, "When Dams Are Built on Shaky Grounds: Policy Choice and Social Performance of Hydro-project based development in Turkey," (2002), 315.

[395] Oktem, "When Dams Are Built on Shaky Grounds," 316.

b. The Ataturk Dam Case (Year of Completion: 1992)

The Ataturk Dam case presents the Turkish state as being better organized from the perspective of offering physical or economic resettlement options to the IDPs. These options have to do with urban or rural resettlement and compensation in cash. The former is government led, while the latter rests on the arbitrary preference of the IDPs. There were 1,131 families who preferred governmental resettlement at the end of 2002, while 231 families would get their houses by 2004. Those not resettled at that time were accommodated in Adiyaman province, near their previous livelihood.[396] However, there were a substantial number of IDPs who either preferred moving out to western Turkey or compensation in cash, as well as those not yet resettled.[397]

Those paid in cash worsened their situation no matter what actions they took with their money. Some of them lost their money on gambling, others put it in the bank and had it quickly devalued as the inflation rates soared as high as 100%, while others started businesses but failed to hold them as they lacked business experience.[398]

A fact-finding mission from the UK, having met with villagers affected by the dam, learned that 80% of them did not get compensation or replacement houses, while cash payments were often delayed and inadequate. The payments finally awarded were as low as one-sixth of the promised amounts to those who appealed to the courts and won their cases. However, a substantial amount of the awarded compensation was retained by local lawyers to process appeals in court.[399] The above findings have been cross-checked from the Norwegian Refugee Council on IDP status.[400] Those not compensated were forced to migrate to the urban areas and cities of the region, borrowing

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[396] Akyurek, "Impact of Ataturk Dam on Social and Environmental Aspects of the Southeastern Anatolia Project," 70.

[397] Akyurek, "Impact of Ataturk Dam on Social and Environmental Aspects of the Southeastern Anatolia Project," 71.

[398] Swiss Federal Institute of Technology (ETH), "Sustainable Management of International Rivers; Case Study: Southeastern Anatolia Project in Turkey, GAP," 11.

[399] The Corner House, "The Ilisu dam, the World Commission on Dams and Export Credit Reform: The Final Report of a Fact-Finding Mission to the Illsu Dam Region" (October 2000).

[400] Norwegian Refugee Council/Global IDP Project, "Profile of Internal Displacement: Turkey" (July 2003), 123.

money from relatives and selling a few things on the street.[401] Most importantly, the villagers told the fact-finding mission that in the cases where land was offered as compensation to those who preferred rural settlement, the people disputed the land titles because properties often had more than one owner, while others had none, which led to bloody clashes. This latter seemed to be the predominant mind-set among the villagers as many of them claimed that, "resettlement had resulted in major social problems, including the breakdown of social networks, clashes and disputes over compensation, and resulting in injuries and death."[402]

That said, the Ataturk Dam case demonstrates better organized governmental dealing with resettlement and compensation than the Keban Dam case, though the process and the living standards of the IDPs are far from humane.

c. The Birecik Dam Case (Year of Completion: 2000)

This case is considered by Turkish authorities to have had a successful process of resettlement and compensation, allegedly on the basis that they had learned their lessons from previous experiences, such as the Ataturk Dam. According to one resource, the Birecik resettlement plan was more innovative than the Ataturk one in that that there was public participation in the process of resettlement. The GAP Regional Administration (GAP-RDA) launched a program under the title "Resettlement, Employment and Economic Investments of People Affected by Birecik Dam" to help the displaced people resettle and adapt to their new environments and a better life.[403] To do so, consultancy offices were established to provide the displaced with information regarding the construction work of the dam and the program of resettlement and compensation, face-to-face surveys, educational programs to improve their economic situation and alternatives relating to the resettlement process.[404]

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401 The Corner House, "The Ilisu dam, the World Commission on Dams and Export Credit Reform."

402 The Corner House, the Ilisu dam, the World Commission on Dams and Export Credit Reform."

403 Akyurek, "Impact of Ataturk Dam on Social and Environmental Aspects of the Southeastern Anatolia Project," 74.

404 Akyurek, "Impact of Ataturk Dam on Social and Environmental Aspects of the Southeastern Anatolia Project," 75–76.

However, different resources claim that despite the attempts at a better resettlement program, the Birecik case displayed major failings in meeting international standards on improving living conditions, and restoring pre-displacement livelihoods and income earning capacities, to name a few.[405] Of a total of 32,000 displaced, only 6,500 resettled from the Halfeti region where 40% of the town named after it flooded when inundation of the dam was completed. Those who resettled were interviewed about the resettlement process. They complained about low quality housing and the problematic process of compensation, resettlement and financing, as they had to deal with multiple agencies that lacked coordination.[406] Compensation was substantial, but the IDPs were faced with high expenses for the purchase of water, because the agencies were late making water connections to their homes. Houses unreachable because of the flooding of the dam reservoir were not compensated at all due to a particular regulation of the Turkish expropriation law. Most of the villagers had enjoyed regular incomes from local fisheries before resettlement, while after relocation to a barren hilltop they could not access the Euphrates River for a sustainable income.[407]

A second source —also based on interviews from displaced people from three villages out of the forty-four, including Halfeti—gives a more precise picture of the perception that the resettled people had of the resettlement program. A majority, 82.5%, claimed that they were worse off after the resettlement. They used to live in bigger houses, while the current ones were smaller, and they had to live separated from their kin. Unemployment, which was non-existent before resettlement, grew to 14.5% afterwards. Before resettlement, each family enjoyed two or three regular incomes, while after, more than 70% of them had between zero and one job to make ends meet for a family of 7 to 8 persons. The provided infrastructure in the new resettlement was adequate in terms of water, electricity, access to roads and education. In regard to the compensations, most of

[405] Sachiko Miyata, "Living Conditions in Resettled Households of the Birecik Dam Area in Southeastern Turkey: Initial Findings from a Household Survey," *Institute of Environmental Studies* (University of Tokyo, 2004), 1.

[406] Kerem Oktem, "When Dams Are Built on Shaky Grounds: Policy Choice and Social Performance of Hydro-project based development in Turkey," (2002), 320.

[407] Oktem, "When Dams Are Built on Shaky Grounds," 321.

them believed that there had been no interest rate in the loans to enhance their compensation for the first five years after the resettlement. The interest rate had increased 12%, and they claimed that they were not aware of any interest rate.[408]

A third source claims that no resettlement plan was publicly announced and those evicted were not consulted, in violation of international standards. Those without land titles received no compensation. The inhabitants of some eighteen villages located close to the dam construction area were forced to abandon their homes when they awoke to find their houses partially submerged by the rising reservoir without receiving a warning. Those eligible for resettlement and who had been moved to new sites complained that their new houses were over-crowded and still needed to be finished.[409]

d. The Ilisu Dam Case (Projected Year of Completion: 2013)

The Ilisu Dam is going to be the second largest dam, after the Ataturk Dam, in the GAP region and is expected to evict from 50,000 to 78,000 people; most resources agree with this number, while the Turkish state claims that roughly 16,000 people will be affected and have the right to resettlement. Kurdish sources report that half of the 78,000 evicted people hold no land titles; thus, they are not eligible for compensation according to Turkish law.[410]

Dam construction works started in October 2008, bringing Turkish troops into the area to strengthen the military presence near the reservoir in order to secure it from PKK guerilla fighters' attacks. Consequently, visitors, locals and foreigners cannot enter the area without permission if they want to monitor the overall progress of the

[408] Miyata, "Living Conditions in Resettled Households of the Birecik Dam Area in Southeastern Turkey," 1.

[409] Judith Neyer and Nicholas Hildyard, "The Birecik, Ermenek and Ilisu Projects Turkey: No Lessons Learnt," The Corner House.

[410] Kurdish Herald, "Turkey's GAP and Its Impact in the Region" (September 2009).

project.[411] In regard to the issue of the resettlement progress, I will base my facts on the year 2008 and before, as well as Turkish press reports from 2008 and up to the present time.

As a follow-up to the 2004 EU's critique of IDPs in Turkey, the Turkish state announced the undertaking of an initiative to create a special agency responsible for IDPs as well as respective amendments on the Law of Compensation. However, after a year, though it was only a short time, it had not yet established the proposed agency or made rulings under the Compensation Law.[412] Moreover, in 2006 a rather harsh critique came from the Organization of Economic Cooperation and Development (OECD) reporting that the overall planning for the construction of the dam was violating three key safeguard policies for hydropower projects set by the World Bank Group. One of the three is related to resettlement and asserts:

> failure to consult with affected communities, failure to put in place a comprehensive budget for income restoration or compensation measures and to include resettlement cost in total costs of the project, failure to accurately identify persons who will be affected by the project, failure to ensure land-for-land based resettlement; between 50,000 and 78,000 people--mainly ethnic Kurds--are expected to be directly affected by the project. With no comprehensive budget for income restoration or compensation measures in place, no adequate resettlement sites available and no clarity as regards the number of affected individuals-many of whom have neither been informed nor consulted on the project, let alone given their consent – destitution will most certainly follow the dam construction.[413]

A fact-finding mission in 2007 interviewed 260 households in villages in the Ilisu and Karabayir areas in regard to issues of resettlement and compensation. In general, the mission found that the affected people were not informed of their rights for resettlement and compensation; they had been told by the Directorate of State Hydraulic

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[411] Christine Eberlein et al., "The Ilisu Dam in Turkey and the Role of Export Credit Agencies and NGO Networks," *Water Alternatives* 3, no. 2 (2010), 294.

[412] Jonathan Sugden et al., "Still Critical: Prospects in 2005 for Internally Displaced Kurds in Turkey," *Human Rights Watch* (March 7, 2005).

[413] Judith Neyer, "Pending Decision on proposed Ilisu Dam: Violations of the 2005 Statement on Export Credits and Hydro-power Projects and Implications for the ongoing Review process of the OECD Common Approaches" (September 2006), 2.

Works (DSI) that only one site was available for resettlement. However, according to the villagers, the site was absolutely uninhabitable as it was situated on a steep rocky hill, without water, provisions or fertile land. They suggested other sites but these were rejected by the DSI. According to the mission, all the villagers shared the view that the compensation they received was half the amount of the price of houses in the area. They accepted taking the money because they were not offered an alternative resettlement site; otherwise, they would have to have taken the site. In the beginning they were supportive of the dam construction because the DSI promised them good land and compensation, but in the end they were much worse off.[414]

A second report, assembled from a committee of experts on the resettlement issue based on facts gathered during its stay in the Ilisu area from March 10 to 19, 2008 gives the whole picture, of what has been done at the federal and local levels. The conclusion of the report asserts:

> The preparedness of the resettlement remains unsatisfactory. The lack of preparation in the resettlement process creates an imbalance that jeopardizes the advance of the entire project. It also entails serious risks of impoverishment, destitution, and social disorganization for the massive population inhabiting the reservoir.[415]

In particular, at the local level, the provision of information and consultation with the reservoir population was not conducted, selection and identification of new relocation land sites with the participation of the people was totally neglected, and compensation under Turkish Law was not paid at the replacement level costs, which still lags behind international standards.[416]At the governmental level, the Turkish state exhibited a tremendous capacity to establish various departments to address the issue of resettlement. For example, under the Directorate-General of Disaster Affairs, which is responsible for villages inundated by reservoirs, there is GAP-RDA under the Prime

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[414] Christine Eberleine and Ercan Ayboga, "Expropriation and Compensation in Ilisu village and Karabayir," *Report of Ilisu Fact-Finding Mission* (October 7, 2007).

[415] Michael Cernea et al., "Institutions and Capacity Building for Resettlement in Ilisu," *The Committee of Experts-Resettlement (*June 2008), 9.

[416] Cernea et al., "Institutions and Capacity Building for Resettlement in Ilisu," 24.

Minister's Office, which acts as the coordinator of the Ministry of Agriculture and Rural Affairs (MARA), the State Planning Organization (SPO), the Housing Construction Agency (TOKI) and the General Directorate of Forestry of the Ministry of Environment and Forestry. The paradox, according to the report, is that these agencies produce a zero-sum result on resettlement, as they do not act together because they do not belong to the same brain; it's one command, but has "fingers of different hands."[417] A new evaluation of the project, from another source, reports that the project of resettlement in Ilisu as of July 2009 presented no satisfactory results.[418]

e. Remarks

From the above cases, we can conclude that the Turkish state has not changed its attitude towards the IDPs in regard to the issue of resettlement and compensation, while it has demonstrated an increasing bureaucracy at the administrative level to address the issue, with no results.

The Keban case shows that the state was not prepared to work out resettlement plans, despite the obvious fact that people were to be evicted from their homes upon completion of the dam. However, in the cases of the Ataturk and Birecik dams, the state demonstrated the will to carry out such plans. The Ilisu case, even though it comes later and after the EU criticism of the status of IDPs, does not show any improvement on the issue.

All cases have many common things to demonstrate:

-The state resettles and compensates a small part of the total IDPs: only those who hold land titles.

-The amount of compensation is half the current price for housing and, if the IDPs choose to resort to courts, they are granted less money because of the amount extracted by lawyers. In the Birecik case, the IDPs from Halfeti town received substantial amount, but they faced high expenses due to unfinished work in their new housing.

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[417] Cernea et al., "Institutions and Capacity Building for Resettlement in Ilisu," 44.

[418] Christine Eberlein et al., "The Ilisu Dam in Turkey and the Role of Export Credit Agencies and NGO Networks," *Water Alternatives* 3, no. 2 (2010), 307.

-The IDPs do not have adequate consultation on their rights to resettlement and did not participate in the process of selection of a new resettlement area; in other cases, they are ignored.

-The living conditions in the new resettlements are judged to be poor and not completed enough to accommodate the IDPs, with the Birecik case being the only exception.

-The living standards of the IDPs have worsened because of unemployment and poverty.

-Implicitly, the IDPs seem to nurture a feeling of distrust towards the state (Birecik case). Also, social tensions (Ataturk case) emerged in the form of disputes over land titles as a corollary result of Turkish laws discriminating against those eligible for resettlement and compensation

On the other hand, tracing the organizational department of the Turkish state responsible for addressing the issue of IDPs, we notice that it follows an ascending trajectory that reaches a peak in the Ilisu case. However, the Ilisu case may be interpreted as an attempt by the Turkish state to respond to the EU criticism over the status of IDPs. Nevertheless, the fact is that, again, there is a gap between theory and practice in the state's actions.

3. Conclusions

Within the broad context of Turkey's prospect for accession to EU, Turkey has much work to do in regard to the status of IDPs. Since the Kurdish ethnic minority in the nation constitutes the majority of IDPs, Turkey must comply with the EU guidelines formulated by the Copenhagen political criteria for ethnic minorities in order to gain full membership. The four resettlement cases highlight the fact that the Turkish state has not taken adequate measures to improve the living standards of the IDPs, which violates international standards. Moreover, the issue of resettlement gains increasing importance

as it is considered to be part of environmental sustainability.[419] In that light, Turkey violates not only EU rules, but also the project's (GAP) philosophy of sustainability, as was mentioned in Chapter III.

In regard to the issue of regional stability, the water regime is still fragile, characterized by political coercion by Turkey who uses water as a weapon with the GAP dams. Moreover, the basin presents a Janus face, with mutual cooperation between Turkey and Syria on the Euphrates but a lack of such cooperation on the Tigris River. On that side of the basin, the PKK insurgency from northern Iraq may inhibit future cooperation between Turkey and Iraq. In this light, we can conclude that regional stability is far from peaceful cooperation.

Lastly, the issues of both human rights and regional stability, if taken together, have a common dimension, which is critical for Turkey. The issue refers to Kurdish populations inhabiting both sides of the Turkey-Iraq common border. The "external" threat of the PKK to Turkey, coupled with a possible "internal" social tension due to the adverse socioeconomic conditions in the Southeastern Anatolia region, will further jeopardize Turkey's accession to EU.

[419] Cecilia Tortajada, "Environmental Sustainability of Water Projects" (PhD diss., Stockholm, 2001), 4.

V. CONCLUSIONS

This thesis addressed an assessment of the water development project (GAP) in Southeastern Anatolia in Turkey, which has been operating for the last two decades. In doing so, the thesis challenged the objectives of the GAP project at the national and local levels as stated by the Republic of Turkey. Additionally, the thesis expanded to the international level to assess the position of the project and its effects in terms of regional stability and human rights within the context of Turkey's meeting EU criteria for its accession to EU membership.

Also, the thesis dealt with two hypotheses that it are believed to be of significance. First, projections of adverse climate change and the impoundment of water in the reservoirs of the dams negatively affect the water quantity of the Euphrates-Tigris basin. Projections show a rising temperature by 3^0 C in Turkey by the year 2070, resulting in increasing the evaporation process. Additionally, the accrued surface water of the reservoirs of the GAP project furthers this trend. Climate change and the reservoirs, combined, constrain water quantity available for irrigation and, thus, adversely affect agriculture production in the GAP region. A corroborative fact for this is that water scarcity is one factor for the decreased irrigation rate, according to a study that examined twelve irrigation schemes in the region. The second hypothesis of the growing population of the three states—Turkey, Syria, and Iraq—is dealt with in the thesis as a future scenario that will increase the demand for water, exacerbating the water depletion problem. The thesis does not provide factual findings of the results of this hypothesis, but it gives an indication that the growing population will put pressure on the states to meet food needs. Implicitly, this is demonstrated by Syria's complaints over not meeting its food and electricity needs. Moreover, Iraq, with a larger population than Syria, is more vulnerable in wheat and rice production. However, both states complained—primarily over depleted resources and, secondarily, for their growing population needs. These hypotheses are complementary to each other and constitute two of the dimensions for "environmental scarcity," which is a provocative factor for conflict in the region.

Concerning the objectives of the GAP project at the national and local levels, the project demonstrates an inability to continue the impressive achievements seen at the beginning of its operation. Agriculture and energy sectors contribute to the nation's economy, but with a significant asymmetry, to the detriment of the former sector. The Turkish state has realized that the energy sector is indulging in the profits of agriculture, which has problems that cannot be easily addressed, predicted, or even reversed. Climatic changes, water scarcity and salinity negatively affect the sector in terms of inhibiting the area to be irrigated and the production of the major crop (cotton). Not fulfilling the aim of irrigating 1.8 million hectares—since 1994 only 270,000 hectares (15%) have been irrigated—will act as a backlash to the state, as it will validate the WCD findings on the debatable issue of large-scale dams achieving their goals. According to the WCD, irrigation projects fall short in physical realization and are less profitable. Most significantly, manufacturing and agro-industry is based on cotton production in the Southeastern Anatolia region. The agro-industry is supposed to bring an increase in economic activities and to bear most of the burden of providing 3.8 million jobs; the projections for the year 2005 were to be 61% of this figure.[420] Cotton production has reached a plateau since the 2001–2002 period of time, demonstrating a decreasing growth trend towards 2005. Up to 2009, it is predicted that the growth will be marginal given the extremely low rate of expansion of irrigated land after 2005.

On the other hand, the WCD states that hydroelectric power dams are closer to their targets.[421] The energy sector of the GAP project has been realized by 75% and by 2013 will reach 88% upon completion of the dams of Ilisu and Cizre dams, newly under construction. The hydropower plants of the GAP project are more profitable than the irrigation projects without running into insurmountable obstacles affecting their effectiveness. Turkey has ever-increasing energy demands, and by exploiting the Euphrates-Tigris waters will lighten pressure on its energy production and economic deficit as a result of energy imports. Moreover, Turkey implicitly envisages exporting

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[420] Unver, "Southeastern Anatolia Project (GAP),"), 462 (Table 3).

[421] World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision-Making* (Earthscan, 2000), 50.

electricity and gearing the nation to the EU energy grid, as the global energy demand is predicted to be on the rise. The investments planned for the energy sector for the years up to 2020 bear witness to the fervent support of the state for this sector. However, there is a limit on the economically exploitable waters of the GAP region, which brings up the issue that the energy sector of the GAP project will not keep up with the nation's energy demand in the long term. In sum, the asymmetry of the sectors will continue to persist into the next decade.

At the local level, this asymmetry will further exacerbate the socioeconomic status of the Southeastern Anatolia region, predominantly inhabited by Kurdish populations. The broad goal of the GAP is to develop this region by reducing the economic disparity between the region and the rest of Turkey within the context of human sustainability. Even though the region displays improvement in the GDP per capita, in absolute numbers, it is worse off economically—compared to the nation's GDP per capita—than it was in the previous decade, 1990–2000. Furthermore, looking at the multiple objectives of the project, it turns out to be an infrastructural project rather than a human-oriented one. The state has focused heavily on the improvement of urban, health, education, transportation and communication infrastructure, neglecting the living standards of the region's people. Failing to develop rural areas and slow down the rural-urban in-migration, the state prepares to accept this migration wave in a materialistic way. Unemployment and poverty have not been alleviated and have even worsened when compared to the pre-GAP period, 1985–1990, which makes questionable the degree of access to public services. For example, many people cannot afford to send their children to schools or even find a job because they are unskilled. Even taking advantage of the CATOMs, which are popular, is not enough to make people eligible to find a job. The CATOMs seem to be doing a good job teaching cultural things to the people of the region, but not in qualifying them for finding jobs, as less than 1% does find a job. The socioeconomic failure of the project is further demonstrated by the state's ineffective protection of the environment. Most dams were constructed without Environmental Impact Assessments Studies (EIASs) and continue to be constructed without them, as in the cases of Ilisu and Cizre. The international community has criticized the Turkish state

for its neglect of international standards for environmental protection. Besides environmental groups' opposition to the GAP project, the European Commission has holistically and criticized these practices and procedures during the screening process of Turkey's accession to EU. The criticism has also deepened of the status of Internally Displaced People (IDPs), which finds fertile ground in the treatment of ethnic minorities displaced by the GAP dams—within the context of Turkey's meeting the political criteria of human rights for accession to EU

At the international level, the GAP project becomes even more important as it complicates Turkey's prospects for its accession to the EU in terms of regional stability and human rights. These two issues are of great concern to the EU within the context of its enlargement towards the Middle East.

The EU acknowledges the water conflict in the Middle East and encourages peaceful solutions and cooperation among conflicting states. The Euphrates-Tigris basin is currently considered to be a water-contested basin. The GAP project spurred military conflicts between Turkey, Syria, and Iraq two times, in 1975 and 1990, due to unilateral construction of dams primarily, on the part of Turkey. Yet, the environmental concerns of Syria and Iraq as a result of the GAP project operation, add to the states' tensions. Reduced flow of water and adverse water quality in terms of high levels of salts negatively affect downstream states' economies when they face constraints to develop their irrigation and national energy goals. Turkey has taken great strides to promote a cooperative regime in the basin in alignment with the EU standards. The Asi Friendship dam on the Orontes River, undertaken in common by Turkey and Syria, is a promising indicator of cooperation in the basin, but it is still under discussion. However, Turkey's hegemonic use of GAP dams as a tool to withhold water from Iraq, in order to extract Iraqi cooperation in clamping down on the PKK insurgency in its northern part, jeopardizes stability in the region for two reasons. First, it introduces an unresolved security dimension between Turkey and Iraq, and second, it contradicts the goal of promoting cooperation between Turkey and Iraq. In the absence of a bilateral water-related agreements between Turkey and Iraq, and with the PKK insurgency still a factor, it is highly likely that the region will see a repetition of the scenario of the PKK being

used as a "trump" card by Iraq, further destabilizing the basin. In sum, Turkey still has a lot of road to cross before trilateral cooperation can be achieved in the basin, safeguarding regional stability.

Meeting the political criteria of Copenhagen and, in particular, the respect and protection of ethnic minorities within the context of human rights, Turkey has received severe criticism from the EU in regard to the status of Internally Displaced People (IDP), which has delayed Turkey's full membership. However, Turkey has not displayed the willingness to adopt policies that would improve the living conditions of the IDPs. Despite some general attempts, which were praised by the EU in 2004, the status of the IDPs remains critical. Moreover, Turkey has been scrutinized on the issue by other organizations, such as the Organization of Economic Cooperation and Development (OECD), which reported multiple violations in 2007, 2008, and 2009, including resettlement and compensation in the Ilisu case in Southeastern Anatolia. Turkey has not changed its practice on resettlement and compensation since 1974, causing IDPs destitution and impoverishment. The trend is clearly delineated in the Keban, Ataturk and Birecik dams' cases. Instead, what has changed is the creation of more agencies to address the same issues without bringing desired results, as the agencies produce a zero-sum result. This may be viewed by the international community as an obvious attempt to address the issue even though it is inconsistent with facts on the ground. The negotiations for Turkey's full membership are set, at the earliest, for the year 2014; however, given its history of resettlement and compensation, Turkey is unlikely to meet the political criteria by that year, costing more delays in its accession process.

In sum, the GAP project during the last decade has failed to continue its good start and seems to be reversing, especially in its essential socioeconomic objective to improve the living standards of the local people. With a failing agriculture sector and an energy sector that is promising for only a medium period of time, the GAP project is not sustainable. The Turkish state will continue to exploit what can be exploited in the basin in terms of economic revenues from the energy sector. However, at the international level, the GAP project has attracted the eyes of the international community for a long time and Turkey's accession to the EU has been scrutinized, causing delays in the

accession process. The date 2014, set for full membership negotiations, will not be met, as Turkey has not yet improved its relations with Iraq regarding the issue of the basin's water management, nor has it changed the status of its IDPs.

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